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SLV-L45AR/L65HFAR/L75HFAR

RMT-V241/V242V

SERVICE MANUAL

Argentina Model

Ver 1.0 1998.07

Photo : SLV-L75HFAR

SPECIFICATIONS

Sistema

Formato
VHS PAL-N/NTSC estándar
Cobertura de canales
VHF 2 a 13
UHF 14 a 69
CATV A-8 a A-1, A a W,
W+1 a W+84
Antena
Terminal de antena de 75 ohmios para VHF/UHF

Entradas/salidas

LINE IN (SLV-L65HFAR)
LINE IN y LINE IN 2 (SLV-L45AR/L75HFAR)
VIDEO IN
Toma fonográfica (1) (SLV-L65HFAR)
Tomas fonográficas (1 por cada) (SLV-L45AR/L75HFAR)
Señal de entrada : 1 Vp-p, 75 ohmios,
desequilibrada, sincronización negativa
AUDIO IN
Tomas fonográficas (2, L/R) (SLV-L65HFAR)
Tomas fonográficas (1 por cada) (SLV-L45AR)
Tomas fonográficas (2 por cada, L/R) (SLV-L75HFAR)
Nivel de entrada : 327 m Vrms,
Impedancia de entrada : superior a
47 kiloohmios
LINE OUT
VIDEO OUT
Toma fonográfica (1)
Señal de Salida : 1 Vp-p, 75 ohmios,
desequilibrada, sincronización negativa
AUDIO OUT
Tomas fonográficas (2, L/R) (SLV-L65HFAR/L75HFAR)
Toma fonográfica (1) (SLV-L45AR)
Salida estándar : 327 m Vrms,
Impedancia de carga : 47 kiloohmios
Impedancia de salida : inferior a
10 kiloohmios

General

Requisitos de alimentación
220 a 240 V CA, 50Hz
Consumo de energía
18 W
Temperatura de funcionamiento
5˚C a 40˚C
Temperatura de almacenamiento
-20˚C a 60˚C
Dimensiones
Aprox. 360 x 97 x 298 mm (an /al / fn)
incluidas las piezas y controles
sobresalientes
Masa
Aprox. 3,7 kg

Accesorios suministrados

Control remoto (1)
Pilas tipo R6 (tamaño AA) (2)
Cable de antena (1)
Cable de audio / video (1)
(sólo el modelo SLV-L65HFAR/L75HFAR)
Cable de alimentación de CA (1)

Diseño y especificaciones sujetos a modificaciones sin previo aviso.

VHS N-PAL NTSC **VIDEO CASSETTE RECORDER**

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer :

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.

3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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TABLE OF CONTENTS

Section	Title	Page
1. GENERAL		
	Paso 1 Conexiones	1-1
	Paso 2 Configuración de la videograbadora	1-2
	Paso 3 Ajuste del reloj	1-3
	Selección del idioma	1-3
	Instrucciones adicionales de sintonización	1-3
	Reproducción de cintas	1-4
	Grabación de programas de televisión	1-4
	Grabación de programas de televisión con temporizador	1-5
	Grabación de programas de televisión mediante la función VCR Plus +	1-6
	Reproducción/búsqueda a distintas velocidades	1-6
	Grabación de programas de televisión con el temporizador instantáneo	1-6
	Comprobación/cancelación de ajustes del temporizador	1-7
	Búsquedas con la función de índice	1-7
	Grabación de programas estéreo y bilingües	1-7
	Edición con otra videograbadora	1-7
	Ajuste de la imagen	1-8E
	Indice visual	1-8E
2. DISASSEMBLY		
	1-1. Removal of Cabinet, Mechanism Unit and Main Board	2-1
	Removing the Cabinet Parts	2-1
	Removing the Mechanism Main Unit and the CP-1 PWB Assembly	2-1
	l-2. Temporarily Setting Up and Connecting CP-1 PWB Assembly	2-3E
	1-3. Installation of the Front Panel	2-3E
3. DIAGRAMS		
	Circuit Boards Location	3-1
	Mechanism Connection Diagram	3-2
	Overall wiring Diagram (SLV-L45AR)	3-3
	Overall wiring Diagram (SLV-L65HFAR/L75HFAR)	3-5
	System Control & Servo Circuit Diagram (SLV-L45AR)	3-7
	System Control & Servo Circuit Diagram (SLV-L65HFAR/L75HFAR)	3-9
	Audio & Video Circuit Diagram (SLV-L45AR)	3-11
	Video & Audio Circuit Diagram (SLV-L65HFAR/L75HFAR)	3-13
4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS		
	CP-1 Board (PW-A) Power Supply Circuit Diagram	4-1
	CP-1 Board (VA-A) Video, Audio & Tuner Circuit Diagram (SLV-L45AR)	4-3
	CP-1 Board (VA-A) Video, Audio & Tuner Circuit Diagram (SLV-L65HFAR/L75HFAR)	4-5
	Video Circuit Waveforms	4-7
	VP-1 Board Video Pre-Amp circuit Diagram (SLV-L45AR)	4-8
	VP-1 Board Video Pre-Amp circuit Diagram (SLV-L65HFAR/L75HFAR)	4-9
	A7101 Display (FLD) Grid/Anode Assignment Drawing & Table	4-11
	TM-1, 2 Boards Operation Key, Display & Timer Circuit Diagram (SLV-L45AR)	4-11
	TM-1, 2 Boards Operation Key, Display & Timer Circuit Diagram (SLV-L65HFAR/L75HFAR)	4-13
	Servo Circuit Waveforms	4-15
	IC 301 System Control & Tuning Control MPU Pin Functions Table	4-16
	CP-1 Board (SY-A) System Control & Servo Circuit Diagram (SLV-L45AR)	4-17
	CP-1 Board (SY-A) System Control & Servo Circuit Diagram (SLV-L65HFAR/L75HFAR)	4-19
5. ADJUSTMENTS		
	1. Maintaining and Checking the Mechanism	5-1
	l -1. Regular Checks and Maintenance Items	5-1
	1-1-1. Regular Checks	5-1
	1-1-2. Cleaning	5-1
	1-2 Service Tools	5-2
	1-2-1. Service Tools	5-2
	1-2-2. Using the Relay Cable (J-6090-057-A)	5-3
	2. An Overview of the Mechanism	5-3
	2-1. Names of the Main Parts	5-3
	2-1-1. Cassette Mechanism Assembly	5-3
	2-1-2. Top View	5-4
	2-1-3. Under Side	5-4
	2-2. An Overview of the Mechanism Modes	5-5
	2-2-1. Mechanism Mode Switching Table	5-5
	2-2-2. Movement Check List for the Main Parts of the Mechanism	5-6
	2-2-3. How to Check the Mechanism Mode Position	5-6
	2-2-4. Self-Diagnosis Display	5-6
	3. Disassembling the Main Parts of the Mechanism	5-7
	3-1. How to Make the Mechanism Move	5-7
	3-1-1. How to Operate the Loading Motor Using A DC Voltage Supply	5-7
	3-1-2. Operating the Loading Motor by the Manual Method	5-7
	3-1-3. Making the Mechanism Move Using the Manual Method	5-7
	3-2. Mechanism Unit	5-8
	3-3. Cassette Drive Mechanism	5-8
	3-3-1. Cassette Mechanism Assembly	5-8
	3-3-2. Cassette Drive Gear	5-9
	3-3-3. Door opener, Under Frame and Stand L	5-9
	3-3-4. Start Rack Gear and Front Rack Gear	5-10
	3-4. Cleaner Roller Assembly	5-10
	3-5. Cylinder (DRUM)	5-11
	3-5-1. Cylinder Motor (ROTOR and STATOR)	5-11
	3-5-2. Cylinder Assembly	5-11
	3-6. FE Head and ACE Head	5-12
	3-6-1. Audio R/P Head Assembly (ACE HEAD)	5-12
	3-6-2. Full Erase Head	5-12
	3-7. Capstan Motor	5-13
	3-7-1. Capstan Motor	5-13
	3-7-2. Capstan Brake Assembly	5-13
	3-8. Loading Motor Assembly and Worm Gear Assembly	5-14
	3-9. Pinch Roller Pressure Mechanism	5-14
	3-9-1. Pinch Roller Lever Assembly	5-14
	3-9-2. Pinch Lift Cam and Pinch Cam Gear	5-15
	3-10. L Guide Lever Assembly and Load Lever Assembly	5-16
	3-11. BT Lever Assembly	5-16
	3-12. Reel Drive Mechanism	5-17
	3-12-1. Reel Belt, Reel Pulley, Friction Gear Assembly and Clutch Change Lever	5-17
	3-12-2. Clutch Mounting Assembly	5-17

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Section	Title	Page
	3-12-3. S Soft Lever, Supply Reel Assembly and S Reel Gear	5-17
	3-12-4. T Soft Brake Assembly, Take Up Reel Assembly, T Reel Gear	5-18
	3-13. Brakes	5-18
	3-13-1. S Brake Assembly, T Brake Assembly, T Brake ACT Slide	5-18
	3-13-2. Brake Control Lever and Brake ACT Lever Assembly	5-19
	3-13-3. S Brake ACT Slide and BT Spring Lever Assembly	5-19
	3-14. Guides	5-20
	3-14-1. Guide Roller Assembly	5-20
	3-14-2. S and T Incline Mounting Assemblies	5-20
	3-15. Wheel Gear 2, Main Cam and Mode Switch	5-21
	3-16. Crescent Slide	5-22
	3-17. S Load Gear, T Load Gear, S Load Lever Assembly and T Load Lever Assembly	5-23
	3-18. Tape Sensors, Reel Sensor and EP SW Lever	5-24
	3-18-1. Tape Top Sensor and Tape End Sensor	5-24
	3-18-2. Reel Sensor	5-24
	3-18-3. EP Switch Lever	5-24
	4. Mechanism Checks and Adjustments	5-25
	4-1. Reel Table Torque Check	5-25
	4-2. Adjusting the BT Lever Assembly Position and Checking the Back Tension Torque in Play Mode	5-25
	4-2-1. BT Lever Pole Position Adjustment	5-25
	4-2-2. Checking the Back Tension Torque Play Mode	5-25
	4-3. Tape Path Adjustment	5-26
	4-3-1. Adjustment Procedure	5-26
	4-3-2. Load Lever Assembly Height Adjustment	5-26
	4-3-3. Guide Roller Height Adjustment	5-27
	4-3-4. Audio R/P Head (ACE HEAD) Height Adjustment, Azimuth Adjustment and Horizontal Position Adjustment	5-28
	4-3-5. Checking After Adjustment	5-29E
6. ELECTRICAL ADJUSTMENTS		
	Circuit Boards Location	6-1
	Self -Diagnosis Display	6-2
	1. Self-Diagnosis Contents and Mechanism Mode Display	6-2
	2. Electrical Adjustment	6-4
	2-1. Servo Circuit Adjustment	6-4
	2-1-1. Test Equipment and Standards Required	6-4
	2-1-2. Location of Adjustment Points	6-4
	2-1-3. Switching Position Adjustment	6-5
	2-1-4. SP STIL V-LOCK Adjustment	6-5
	2-2. Video Circuit Relay Jig	6-6
	2-2-1. Test Equipment and Standards Required	6-6
	2-3. MTS Decoder Circuit Adjustment (SLV-L65HFAR/L75HFAR only)	6-7
	2-3-1. Test Equipment and Standards Required	6-7
	2-3-2. Location of Adjustment Points	6-7
	2-3-3. Stereo/SAP Filter Adjustment	6-8
	2-3-4. Stereo VCO Adjustment	6-8
	2-3-5. Input Level Adjustment	6-8
	2-3-6. Separation Adjustment	6-8
	2-3-7. Audio Output Mode and Output Signal Check	6-9
	2-4. IF Circuit Adjustment	6-10E
	2-4-1. Test Equipment and Standard Required	6-10E
	2-4-2. Location of Adjustment Point	6-10E
	2-4-3. RF AGC Adjustment	6-10E
	3. Test Points for Tape Path Adjustment	6-10E
7. EXPLODED VIEWS		
	7-1. Cabinet & Chassis Parts	7-1
	7-2. Mechanism Parts-1	7-2
	7-3. Mechanism Parts-2	7-4E
8. ELECTRICAL PARTS LIST		8-1
	Hardware List	8-9E

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SECTION 1
GENERAL

This section is extracted from SLV-L75HFAR instruction manual.

Paso 1

Conexiones

Selección de la mejor opción de conexión

Existen muchas maneras de conectar la videograbadora. Para determinar la mejor conexión para su sistema, estudie esta tabla. A continuación, emplee los diagramas y procedimientos que se ofrecen en las páginas siguientes para configurar la videograbadora.

Si tiene	Utilice	Consulte la
Un televisor con entrada de audio/video	**La conexión de audio/video (A/V)** y, a continuación, siga uno de estos procedimientos de conexión.	**Página 5**
Sólo una antena, sin televisión por cable	**Conexión 1**	**Página 6**
Un decodificador con numerosos canales codificados	**Conexión 2**	**Página 7**
Un decodificador con pocos canales codificados, o no tiene decodificador	**Conexión 3**	**Página 8**
Un decodificador con pocos canales codificados, con interruptor A/B	**Conexión 4**	**Página 9**

Después de realizar las conexiones, siga las instrucciones de configuración.

Tras finalizar la configuración, ya puede utilizar la videograbadora.

Antes de empezar

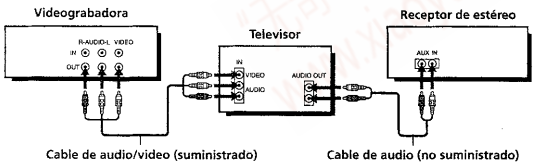
- Desactive la alimentación de todos los equipos.
- No conecte los cables de alimentación de CA hasta que haya efectuado todas las conexiones.
- Asegúrese de que las conexiones sean firmes. Una conexión floja puede producir distorsiones de la imagen.
- Si ninguno de los ejemplos ofrecidos corresponden a su televisor, consulte al proveedor Sony más próximo o a un técnico calificado.

Conexión de audio/video (A/V) — **Página 5**

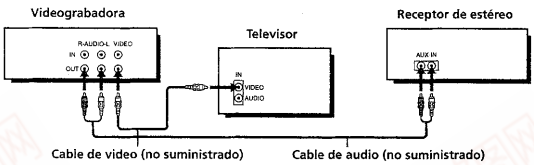
Si el televisor cuenta con tomas de audio/video (A/V), obtendrá una mejor imagen y sonido si emplea una de estas conexiones para la videograbadora. Si desea experimentar la verdadera sensación de disfrutar del cine en casa, conecte las salidas de audio de la videograbadora o televisor a su sistema de sonido estéreo. Si el televisor no tiene entradas de A/V, consulte las conexiones de antena y televisión por cable en las páginas siguientes.

Si no piensa utilizar la videograbadora para grabar programas, habrá terminado de configurarla tras realizar las conexiones que se muestran en esta página. Si desea grabar emisiones abiertas o desde el sistema de televisión por cable, efectúe estas conexiones primero y, a continuación, consulte las conexiones de antena y de televisión por cable en las páginas siguientes.

A Utilice esta conexión si el televisor dispone de tomas de estéreo



B Emplee esta conexión si el televisor no cuenta con tomas de estéreo



Nota

Para reproducir una cinta en estéreo, deberá utilizar la conexión A/V.

continúa

Conexiones (continuación)

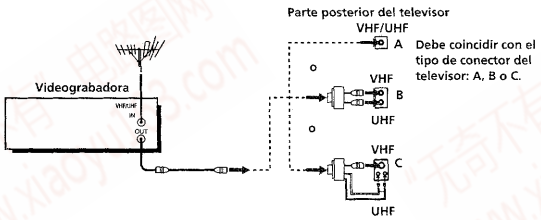
Conexión 1 — **Página 6**

Conexión de antena

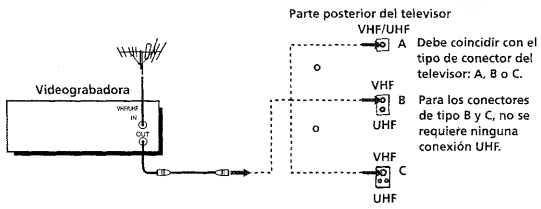
Realice las siguientes conexiones si va a utilizar una antena (si no dispone de televisión por cable).

A Emplee esta conexión si utiliza:

- Una antena VHF/UHF (recibe los canales 2 a 13 y 14 y posteriores)
- Una antena de UHF solamente (recibe los canales 14 y posteriores)
- Antenas VHF y UHF separadas



B Utilice esta conexión si la antena es sólo de VHF (solamente recibe los canales 2 a 13)



Si no puede conectar el cable de antena directamente a la videograbadora

Si el cable de antena es plano (un cable bifilar plano de 300 ohmios), añada un conector de antena externo (no suministrado) para poder enchufar el cable al conector VHF/UHF IN. Si tiene distintos cables para las antenas VHF y UHF, emplee un mezclador de bandas U/V (no suministrado).

Conexión 2 — **Página 7**

Decodificador con numerosos canales codificados

Uso recomendado

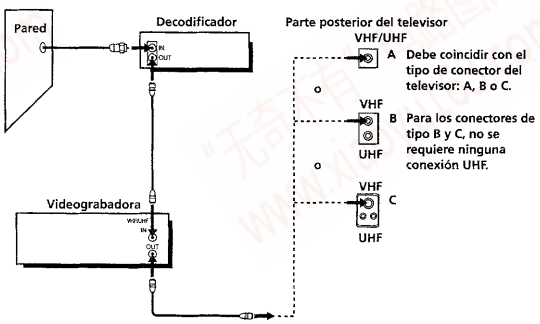
Utilice esta conexión si el sistema de televisión por cable codifica todos o la mayor parte de los canales.

Posible con esta conexión

- Grabar desde cualquier canal seleccionándolo en el decodificador.

Imposible

- Grabar desde un canal mientras ve otro.



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Conexión 3 Página 8

Sin decodificador o con decodificador con pocos canales codificados

Uso recomendado

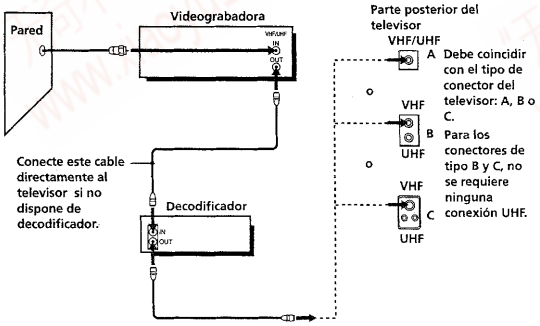
Utilice esta conexión si no dispone de decodificador, o si el sistema de televisión por cable codifica pocos canales.

Posible con esta conexión

- Grabar desde cualquier canal no codificado seleccionándolo en la videograbadora.

Imposible

- Grabar desde canales codificados que requieran decodificador.



Conexión 4 Página 9

Un decodificador con pocos canales codificados, con uso del interruptor A/B

Uso recomendado

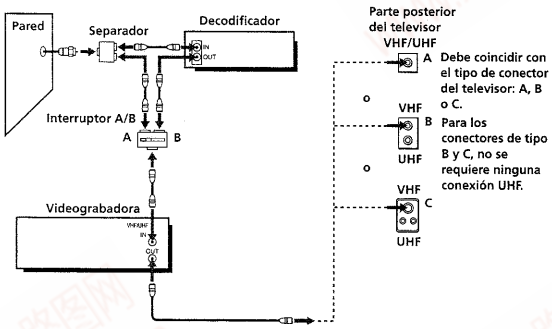
Al utilizar un interruptor A/B (no suministrado), esta conexión permite grabar fácilmente tanto desde los canales codificados como desde los no codificados.

Posible con esta conexión

- Grabar desde cualquier canal no codificado seleccionándolo directamente en la videograbadora (el interruptor A/B se sitúa en A).
- Grabar desde cualquier canal codificado seleccionándolo en el decodificador (el interruptor A/B se sitúa en B).

Imposible

- Grabar desde un canal codificado mientras ve otro canal (el interruptor A/B se sitúa en B).

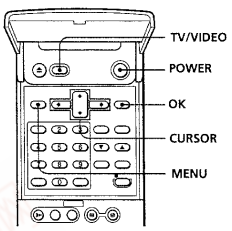


Paso 2

Configuración de la videograbadora

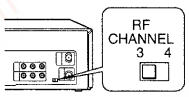
Antes de empezar...

Inserte dos pilas tamaño AA (R6) en el control remoto de forma que las marcas + y – de las pilas coincidan con las del diagrama del interior del compartimiento de las mismas. Inserte primero el extremo negativo (–) y, a continuación, ejerza presión hasta que el extremo positivo (+) quede encajado en su sitio.



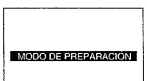
1 Sitúe el interruptor RF CHANNEL en 3 o 4, preferiblemente en un canal que no se utilice en su localidad. Si ambos se usan, puede emplear cualquiera de ellos.

Si ha realizado las conexiones A/V (página 5), puede omitir este paso.



2 Encienda el televisor y cambie al canal de video (el canal 3 o 4).

3 POWER — Presione POWER para activar la videograbadora.

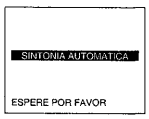


4 TV/VIDEO — Presione TV/VIDEO en el control remoto para mostrar el indicador VCR en el visualizador.

5 OK — Presione OK.

6 CURSOR, OK — Presione CURSOR (↑/↓) para desplazar el cursor (►) al idioma que desee y, a continuación, presione OK.

La videograbadora empieza a sintonizar canales en forma automática. Tras sintonizar todos los canales disponibles, aparece el número de canal más bajo.



Para detener el proceso de sintonización

Presione CL en la videograbadora.

Configuraciones adicionales de la videograbadora según la conexión y el sistema de color del televisor

1 MENU, OK — Presione MENU, seleccione SELECCIÓN DEL SISTEMA y, a continuación, presione OK.

2 CURSOR — Presione CURSOR (↑/↓) para seleccionar ANT/CABLE y CURSOR (←/→) para elegir ANT o CABLE, según la conexión.

Conexión 1 o 2: Seleccione ANT.

Conexión 3 o 4: Elija CABLE.

Al seleccionar CABLE, el indicador C aparece en el visualizador.

3 CURSOR — Presione CURSOR (↑/↓) para seleccionar SISTEMA y CURSOR (←/→) para elegir PAL-N o NTSC, según el sistema de color del televisor.

Televisor PAL-N: Seleccione PAL-N.

Televisor NTSC: Elija NTSC.

4 OK — Presione OK.

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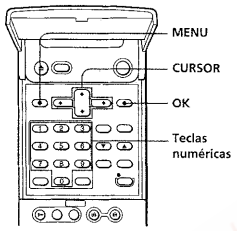
Paso 3

Ajuste del reloj



Ajuste la fecha y la hora para utilizar la función de temporizador con el fin de grabar programas.

Antes de empezar...

- Encienda la videograbadora y el televisor.
- Cambie al canal de video (el canal 3 o 4) en el televisor. Si el televisor está conectado a la videograbadora mediante conexiones A/V, elija la entrada de video.
- Presione TV/VIDEO para ver el indicador VCR en el visualizador.

1 MENU, OK — Presione MENU y, a continuación, seleccione AJUSTE DEL RELOJ y presione OK.

2 1 2 3 4 5 6 7 8 9 0 — Presione las teclas numéricas para definir el día, mes y año actuales.

Para los números de un dígito, presione la tecla numérica 0 antes de introducir el número. El día de la semana se define de forma automática.

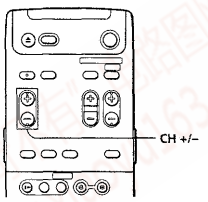
Si se equivoca, presione CURSOR (◆).

3 1 2 3 4 5 6 7 8 9 0 — Presione las teclas numéricas para definir la hora y los minutos.

4 OK — Presione OK para iniciar el reloj.

El reloj empieza a funcionar desde los cero segundos.

Para ajustar la hora de verano

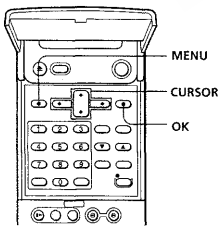


1 Presione MENU, seleccione AJUSTE DEL RELOJ y presione OK.

2 Para avanzar 1 hora, presione CH+. Para retroceder 1 hora, presione CH–.

3 Presione OK.

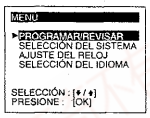
Selección del idioma



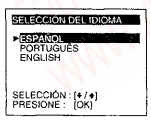
Puede seleccionar uno de los tres idiomas para la indicación en pantalla mediante el control remoto. El ajuste inicial es Español.

1 MENU — Presione MENU.

El menú aparece en la pantalla del televisor.



2 CURSOR (◆/◆), OK — Presione CURSOR (◆/◆) para llevar el cursor (►) hasta SELECCIÓN DEL IDIOMA y presione OK.



3 CURSOR (◆/◆), OK — Presione CURSOR (◆/◆) para desplazar el cursor (►) hasta el idioma que desee y presione OK.

El menú desaparece de la pantalla del televisor y la indicación en pantalla pasa a utilizar el idioma seleccionado.

Instrucciones adicionales de sintonización

Antes de empezar...

- Encienda la videograbadora y el televisor.
- Cambie al canal de video (el canal 3 o 4) en el televisor. Si el televisor está conectado a la videograbadora mediante conexiones A/V, elija la entrada de video.
- Presione TV/VIDEO para ver el indicador VCR en el visualizador.

Para añadir canales de televisión de forma manual

Es posible sintonizar manualmente los canales que no pudieron sintonizarse automáticamente.

1 Presione las teclas numéricas para introducir el canal de televisión.
2 Presione ENTER.
3 Presione MANUAL en la videograbadora.
Para sintonizar otros canales manualmente, repita los pasos 1 y 2.

Para borrar canales no deseados

Los canales borrados se omitirán posteriormente al presionar las teclas CH +/–.

1 Presione CH+/– o las teclas numéricas para seleccionar el canal de televisión que desee borrar.
2 Presione ENTER si ha seleccionado el canal con las teclas numéricas.
3 Presione ERASE en la videograbadora. La indicación "S" aparece durante 3 segundos en el visualizador.
Para borrar otros canales, repita los pasos 1 y 2.

Para restaurar automáticamente todos los canales que pueden recibirse

Presione AUTO en la videograbadora.

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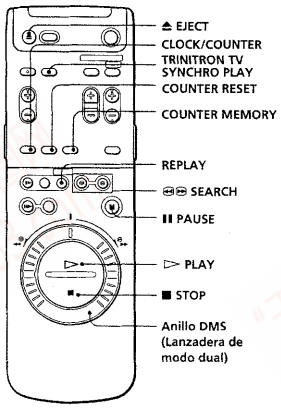
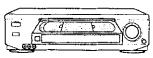
Reproducción de cintas



1 Encienda el televisor y cambie al canal de video.

2 Inserte una cinta.

La videograbadora se enciende en forma automática. La cinta comienza a reproducirse si se ha retirado la lengüeta de seguridad.



3 PLAY ▷ Presione ▷ PLAY.

Cuando la cinta llega al final, se rebobina automáticamente.

Tareas adicionales

Para	Presione
Parar la reproducción	■ STOP
Introducir una pausa	❚❚ PAUSE
Reanudar la reproducción	❚❚ PAUSE o ▷ PLAY
Buscar hacia delante	SEARCH durante la reproducción
Buscar hacia atrás	SEARCH durante la reproducción
Efectuar un avance rápido	Gire el anillo DMS hasta ▶▶ durante una parada.
Rebobinar la cinta	Gire el anillo DMS hasta ◀◀ durante una parada.
Expulsar la cinta	⏏ EJECT

Para utilizar la función de repetición de reproducción

Puede rebobinar y volver a reproducir inmediatamente una escena que desee ver de nuevo.

Durante la reproducción, presione REPLAY un máximo de cuatro veces. La videograbadora rebobina la cinta 10 segundos por cada presión de la tecla y, a continuación, reanuda la reproducción.

Para utilizar el contador de cinta

En un punto de la cinta que desee localizar posteriormente, presione COUNTER RESET. El contador del visualizador se pone en "0:00:00". Para buscar este punto más tarde, consulte el contador.

Para localizar el punto 0:00:00 del contador de forma automática

Presione COUNTER MEMORY para ver "M" en el visualizador. Gire el anillo DMS hasta ◀◀, o ▶▶ en el caso de un contador – (menos). La cinta se detiene automáticamente en el punto 0:00:00.

Para cancelar la función de memoria del contador, presione COUNTER MEMORY para desactivar "M".

Para visualizar el reloj mientras la cinta se encuentra en la unidad

Presione CLOCK/COUNTER. Vuelva a presionar esta tecla para volver al contador.

continúa

Reproducción de cintas (continuación)

Activación de la videograbadora y del televisor, e inicio de la reproducción automáticamente (Reproducción sincronizada de televisores Trinitron)

Es posible utilizar esta función sólo si el televisor es Sony (Trinitron).

Cómo conectar la videograbadora y el televisor para utilizar esta función

Conecte la videograbadora y el televisor con el cable de audio/video (consulte "Conexión de audio/video (A/V)" en la página 5). Asegúrese de conectar el cable de audio/video a las tomas VIDEO IN 1 del televisor si éste dispone de dos o más entradas. El televisor debe colocarse donde responda al control remoto mientras lo orienta hacia la videograbadora.

Operación

Compruebe que el televisor se encuentre en el modo de espera.

Presione y mantenga presionada TRINITRON TV SYNCHRO PLAY durante unos dos segundos.

La videograbadora y el televisor se encienden, y éste se ajusta en el canal de video. Si hay una cinta en la videograbadora, la reproducción se iniciará automáticamente.

Consejo

- Puede controlar un televisor Sony con las teclas grises del control remoto.

Notas

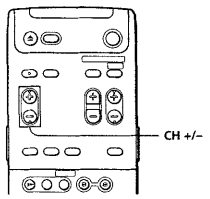
- Cuando la videograbadora permanece en modo de pausa durante más de cinco minutos, el aparato vuelve automáticamente al modo de reproducción.
- Las cintas grabadas en modo LP o EP con otras videograbadoras pueden reproducirse con este aparato, pero es posible que aparezca ruido en pantalla.
- El contador vuelve a "0:00:00" siempre que vuelva a insertarse una cinta.
- El contador deja de contar cuando llega a una parte no grabada de la cinta.
- Dependiendo del tipo de televisor, puede ocurrir lo siguiente mientras se reproduce una cinta grabada en el sistema NTSC:
  - la imagen aparece en blanco y negro
  - la imagen se mueve
  - no se recibe imagen en la pantalla del televisor
  - aparecen estrías negras horizontalmente en la pantalla del televisor
  - la densidad del color aumenta o disminuye
  - la calidad de imagen puede deteriorarse.
- Si la función de reproducción sincronizada de televisores Trinitron no se activa correctamente:
  - Espere unos instantes y vuelva a presionar la tecla.
  - Sustituya las pilas por otras nuevas y vuelva a presionar la tecla.

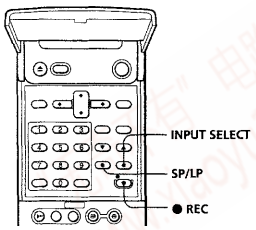
  Esta función puede no activar ciertos televisores Sony debido a las limitaciones de señal del control remoto.
- No presione TRINITRON TV SYNCHRO PLAY durante la reproducción. Si lo hace, la fuente de entrada del televisor cambiará momentáneamente al sintonizador de televisión.

Grabación de programas de televisión

Si conecta la videograbadora al televisor sólo con el cable de antena

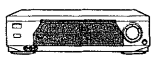
Siempre que utilice la videograbadora, cambie al mismo canal en el televisor y en el interruptor RF CHANNEL de la videograbadora.





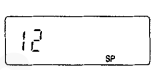
1 Encienda el televisor y cambie al canal de video.

2 Inserte una cinta.



3 INPUT SELECT Presione INPUT SELECT hasta que aparezca un número de canal en el visualizador.

4 CH Presione CH +/– para seleccionar el canal que desee grabar.



continúa

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Grabación de programas de televisión (continuación)

5 SP/LP — Presione SP/LP para seleccionar la velocidad de la cinta, SP o LP para PAL-N, o SP o EP para NTSC.

6 ● REC — Presione ● REC para iniciar la grabación.
El indicador REC aparece en el visualizador.

Para detener la grabación
Presione ■ STOP.

Para ver otro programa mientras graba
1 Presione TV/VIDEO para desactivar el indicador VCR en el visualizador.
2 Si el televisor está conectado a las tomas LINE OUT de la videograbadora, ajústelo en la entrada de televisión; en caso contrario, omita este paso.
3 Seleccione otro canal en el televisor.

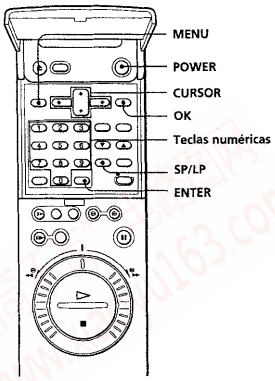
Para guardar una grabación
Para evitar el borrado accidental, quite la lengüeta de seguridad tal como se muestra en la ilustración. Para volver a grabar en la cinta, tape el agujero con cinta adhesiva.

Lengüeta de seguridad

Consejos
- Para seleccionar un canal, puede utilizar las teclas numéricas del control remoto. Introduzca el número de canal y presione ENTER.
- Para grabar desde una fuente conectada a las tomas LINE IN o LINE IN 2, presione INPUT SELECT para que "L1" o "L2" aparezca en el visualizador.
- Si no desea ver la televisión mientras graba, puede apagar el televisor.

Notas
- PAL-N: LP proporciona un tiempo de grabación dos veces más largo que SP; sin embargo, SP produce imágenes de mejor calidad.
- NTSC: EP ofrece un tiempo de grabación tres veces más largo que SP, pero SP produce imágenes de mejor calidad.
- Cuando se encuentra conectado el decodificador, asegúrese de encenderlo durante la grabación.

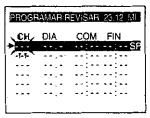
Grabación de programas de televisión con temporizador



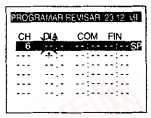
Es posible predefinir hasta seis programas a la vez.

Antes de empezar
- Compruebe que el reloj de la videograbadora se ha ajustado correctamente.
- Encienda el televisor y cambie al canal de video. Si utiliza un decodificador, enciéndalo.
- Inserte una cinta con la lengüeta de seguridad puesta. Verifique que la cinta es más larga que el tiempo total de grabación.

1 MENU, OK — Presione MENU, seleccione PROGRAMAR/REVISAR y presione OK.
Si no se ha ajustado el reloj, la videograbadora mostrará la pantalla de ajuste del reloj. Ajuste el reloj (consulte la página 12) antes de realizar este paso.



2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪, ENTER — Seleccione el número de canal con las teclas numéricas y, a continuación, presione ENTER.
Si se equivoca, presione CURSOR (←) e introduzca el número correcto.



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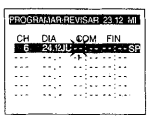
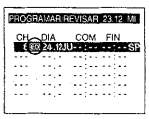
Grabación de programas de televisión con temporizador (continuación)

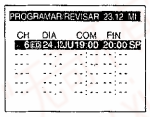
3 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ — Defina la fecha y el mes de inicio de la grabación con las teclas numéricas.
Si el número es de un dígito, presione la tecla 0 antes de introducirlo.
- Para ajustar la grabación diaria/semanal, presione CURSOR (↑) varias veces.



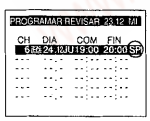


Para grabar	Seleccione
Todos los días	ED
Todos los días de lunes a viernes	M-F
Una vez a la semana	WK

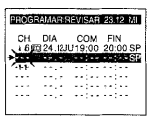
4 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ — Defina las horas de inicio y finalización de la grabación con las teclas numéricas.



5 SP/LP — Presione SP/LP para seleccionar la velocidad de la cinta.
Seleccione SP o LP para PAL-N.
Seleccione SP o EP para NTSC.



6 OK — Presione OK.
El cursor (▶) vuelve a aparecer al principio de la siguiente línea.
Para definir otro ajuste del temporizador, repita los pasos 2 a 6.



7 POWER — Presione POWER para apagar la videograbadora.
Aparece el indicador ⏲ en el visualizador. La videograbadora entra en modo de espera para grabar. Si utiliza un decodificador, asegúrese de dejarlo encendido.

Para detener la grabación
Presione ■ STOP.

Para utilizar la videograbadora después de ajustar el temporizador
Para usar la videograbadora antes de iniciarse una grabación con temporizador, simplemente presione POWER. Desaparece el indicador ⏲ y se enciende la videograbadora. Después de utilizar la videograbadora, no olvide presionar POWER para ajustar dicha videograbadora en el modo de grabación con temporizador en espera.
Es posible realizar las siguientes tareas mientras la videograbadora graba:
- Reiniciar el contador.
- Comprobar los ajustes del temporizador.
- Ver otro programa de televisión.

Para bloquear la videograbadora después de ajustar el temporizador (Bloqueo para niños)
Con la videograbadora encendida, mantenga presionada POWER en la videograbadora hasta que "LK" aparezca en el visualizador. La videograbadora se apaga y no funcionará excepto para realizar la grabación con temporizador.
Para desbloquear la videograbadora, mantenga presionada POWER en la videograbadora hasta que "LK" desaparezca del visualizador. La videograbadora se desbloquea y se enciende.
Para detener la grabación con temporizador mientras la videograbadora se encuentra bloqueada, presione ■ STOP. La grabación se detiene y la videograbadora se desbloquea.

Consejo
- Para grabar desde una fuente conectada a las tomas LINE IN o LINE IN 2, presione INPUT SELECT para que "L1" o "L2" aparezca en la posición "CH".

Notas
- Cuando la cinta llega a su fin durante la grabación, ésta se finaliza y la videograbadora se apaga.
- El indicador ⏲ de la videograbadora parpadea en los siguientes casos:
  - Al presionar POWER sin insertar ninguna cinta.
  - Al utilizar la videograbadora hasta cinco minutos antes de iniciarse la grabación con temporizador.

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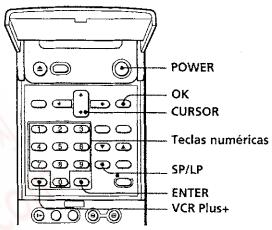
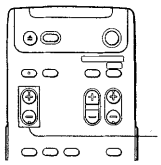
Grabación de programas de televisión mediante la función VCR Plus+



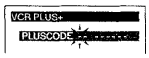
Basta con introducir el código PlusCode del programa, que se indica en la guía de programación de televisión. La fecha, horas y número de canal de dicho programa se ajustan automáticamente.



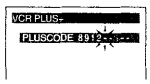
Antes de empezar

- Compruebe que el reloj de la videograbadora se ha ajustado correctamente.
- Encienda el televisor y cambie al canal de video. Si utiliza un decodificador, enciéndalo.
- Inserte una cinta con la lengüeta de seguridad puesta. Verifique que la cinta es más larga que el tiempo total de grabación.

1 VCR Plus+ — Presione VCR Plus+.

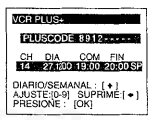


2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ — Presione las teclas numéricas para introducir el código PlusCode del programa.
Si comete un error, presione CURSOR (♦) e introduzca el número correcto.



3 OK — Presione OK.

- Si "---" parpadea en la posición "CH", presione las teclas numéricas para ajustar el número de canal que corresponda al programa de televisión y, a continuación, presione ENTER.
- Si el número de canal es incorrecto, presione CURSOR (♦) dos veces e introduzca el número correcto; a continuación, presione ENTER.

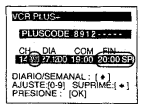


ENTER

4 CURSOR — Si es necesario, puede cambiar los ajustes.

- Presione CURSOR (♦) para seleccionar el tipo de grabación diaria/semanal.

Para grabar	Seleccione
Todos los días	ED
Todos los días de lunes a viernes	M-F
Una vez a la semana	WK



CH

- Presione CH +/– varias veces para cambiar la hora de finalización. Con cada presión, el tiempo de grabación aumenta o disminuye en 10 minutos.

SP/LP

- Presione SP/LP para seleccionar la velocidad de cinta, SP o LP para PAL-N, o SP o EP para NTSC.

5 OK — Presione OK.
Para introducir otro ajuste, repita los pasos 2 a 5.

6 POWER — Presione POWER para apagar la videograbadora.
El indicador ⊡ aparece en el visualizador y la videograbadora entra en el modo de espera de grabación. Si utiliza un decodificador, asegúrese de dejarlo encendido.

Para detener la grabación

Presione ■ STOP.

Para utilizar la videograbadora después de ajustar el temporizador

Consulte la página 23.

Para bloquear la videograbadora después de ajustar el temporizador (Bloqueo para niños)

Consulte la página 23.

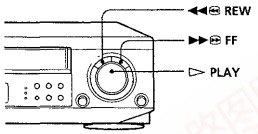
Consejos

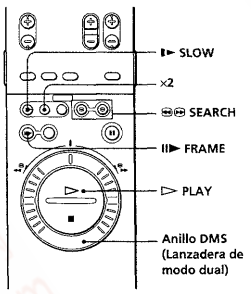
- Para grabar desde una fuente conectada a las tomas LINE IN de la parte posterior de la videograbadora, presione INPUT SELECT para que "L1" aparezca en la posición "CH" en el anterior paso 3. Para la grabación con VCR Plus+, no es posible utilizar las tomas LINE IN 2 de la parte frontal de la videograbadora.
- Para cancelar el procedimiento, presione VCR Plus+ antes de presionar OK en el anterior paso 5.

Nota

- Si la videograbadora no acepta el código PlusCode, significa que:
  - El código es incorrecto.
  - Seleccionó incorrectamente ED, M-F o WK para un programa que se va a emitir dentro de un espacio de tiempo superior a siete días.

Reproducción/ búsqueda a distintas velocidades





Consejo

- Ajuste la imagen con las teclas TRACKING NORMAL/SLOW ▼/▲ si:
  - Aparecen rayas durante la reproducción a cámara lenta.
  - La imagen tiembla durante las pausas.

Notas

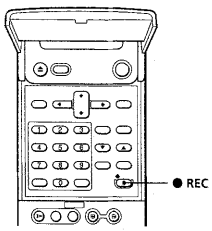
- El sonido desaparece durante estas operaciones.
- Pueden aparecer rayas o nieve o no haber color durante estas operaciones.
- Al reproducir una cinta a cámara lenta durante más de cinco minutos, la videograbadora cambia automáticamente a la reproducción normal.

Opciones de reproducción	Operación
Reproducción a alta velocidad	Durante la reproducción o pausa: • Presione SEARCH o SEARCH, o bien • Gire el anillo DMS hasta ▸▸ FF o ◂◂ REW.
Avance rápido/ rebobinado	Durante una parada, gire el anillo DMS hasta ▸▸ FF o ◂◂ REW.
Reproducción cintas a una velocidad dos veces mayor que la normal	Durante la reproducción o pausa: • Presione ×2, o bien • Gire el anillo DMS en el sentido de las agujas del reloj hasta ×2.
Visualización de la imagen durante el avance rápido o rebobinado	Durante el avance rápido, gire el anillo DMS hasta ▸▸ FF. Durante el rebobinado, gire el anillo DMS hasta ◂◂ REW. Suelte el anillo para reanudar el avance rápido o rebobinado.
Reproducción cintas a cámara lenta	Durante la reproducción o pausa, presione II▸ SLOW.
Reproducción a una velocidad cinco veces menor que la normal	Durante la reproducción, gire el anillo DMS en el sentido de las agujas del reloj hasta 1/5.
Reproducción cuadro por cuadro	Durante una pausa, presione II▸ FRAME.

Para reanudar la reproducción normal

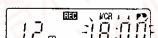
Presione ▷ PLAY.

Grabación de programas de televisión con el temporizador instantáneo

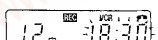


Después de iniciarse una grabación sin temporizador, es posible ajustar el espacio de tiempo de grabación hasta un máximo de 24 horas.

1 Mientras graba, presione ● REC dos veces.



2 Presione ● REC varias veces para ajustar el espacio de tiempo de grabación.
Con cada presión, el tiempo aumenta en incrementos de 30 minutos.



Para comprobar o aumentar el espacio de tiempo de grabación

Presione ● REC una vez. El espacio de tiempo de grabación aparece durante 10 segundos. Si desea aumentar dicho espacio, presione ● REC antes de que transcurran 10 segundos para ajustar el nuevo espacio de tiempo de grabación.

Para detener la grabación

Presione ■ STOP.

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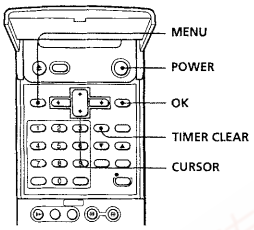
Comprobación/ cancelación de ajustes del temporizador



Nota

- Al cambiar el ajuste, cancélelo en primer lugar y, a continuación, vuelva a definirlo.

1 Presione POWER para encender la videograbadora.

2 Presione MENU, seleccione PROGRAMAR/ REVISAR y presione OK:

- Para cambiar o cancelar un ajuste, vaya al paso siguiente.
- Si desea comprobar un ajuste y no necesita cancelarlo, presione MENU y, a continuación, POWER para volver al modo de espera de grabación.

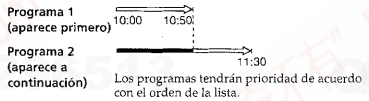
3 Presione las teclas CURSOR (↑/↓) para seleccionar el ajuste que desee cancelar y presione TIMER CLEAR.

4 Presione MENU.

Si quedan ajustes, presione POWER para volver al modo de espera de grabación.

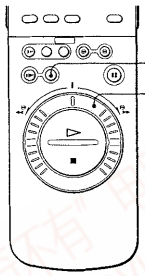
Cuando se superponen los ajustes del temporizador

La videograbadora no grabará los programas superpuestos. Si tiene algún ajuste superpuesto, cámbielo.



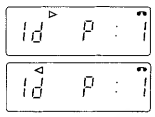
Los programas tendrán prioridad de acuerdo con el orden de la lista.
El programa 2 no comenzará a grabarse hasta finalizar el programa 1.

Búsquedas con la función de índice



La videograbadora marca la cinta con señales de índice cada vez que se inicia la grabación para facilitar la localización posterior de las grabaciones.

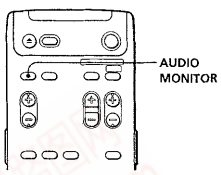
Presione INDEX y gire el anillo DMS hasta ▶▶ para buscar hacia delante o hasta ◀◀ para buscar hacia atrás durante la reproducción o una parada.
Al llegar a la posición de índice, la reproducción se inicia de forma automática.

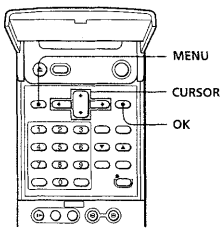


Para detener la búsqueda de índices

Presione ■ STOP.

Grabación de programas estéreo y bilingües





Consejos

- El indicador HIFI se ilumina con el indicador ST cuando la videograbadora recibe o reproduce un programa estéreo.
- El indicador NTSC se ilumina cuando la videograbadora recibe o reproduce un programa NTSC.

Notas

- Si lo define en MONO, no será posible seleccionar el tipo de sonido con la tecla AUDIO MONITOR.
- Es posible grabar sonido EST, SAP o MONO sólo si selecciona cada sonido en SELECCIÓN DEL SISTEMA del MENU.

1 Presione MENU, seleccione SELECCIÓN DEL SISTEMA y presione OK.

2 Presione las teclas CURSOR (↑/↓) para seleccionar el MTS (sistema multisintonizador) y las teclas CURSOR (←/→) para elegir el modo apropiado:

- EST (estéreo) para grabar programas de estéreo
- SAP para grabar el Segundo Programa de Audio
- MONO para reducir el ruido de los programas estéreo

3 Presione OK.

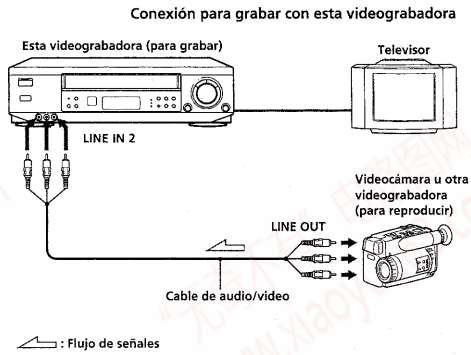
Para seleccionar el tipo de sonido

Presione AUDIO MONITOR varias veces.

Se escucharán los siguientes tipos de sonido durante la reproducción

Programas de estéreo		SAP	
Visualizador	Tipo de sonido	Visualizador	Tipo de sonido
LR	Estéreo	LR	Monofónico + SAP
L	Izquierdo	L	Monofónico
R	Derecho	R	SAP
Ninguna	Monofónico	Ninguna	SAP

Edición con otra videograbadora



Notas

- Asegúrese de conectar los enchufes a las tomas del mismo color.
- Si ha conectado esta videograbadora a las tomas LINE IN y LINE OUT de la otra grabadora, seleccione correctamente la entrada para evitar un zumbido.
- De forma alternativa, puede utilizar las tomas LINE IN de la parte posterior de la videograbadora.

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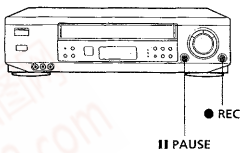
Operación al grabar con esta videograbadora



Consejos

- Para editar con más precisión, utilice las teclas II PAUSE de las videograbadoras para poner fin a la pausa y comenzar a editar.
- Para eliminar escenas no deseadas, presione II PAUSE en esta videograbadora al principio de una escena que no quiere. Cuando termine la escena, vuelva a presionar II PAUSE para reanudar la grabación (edición montada).

Nota

- Cuando una pausa dura más de cinco minutos, el aparato reproductor cambia automáticamente al modo de reproducción y esta videograbadora (para grabar) pasa al modo de parada.

Antes de comenzar a editar

- Encienda el televisor y cambie al canal de video.
- Presione INPUT SELECT para que aparezca "L1" o "L2" en el visualizador.
- Presione SP/LP para seleccionar la velocidad de grabación de la cinta, SP o LP para PAL-N, o SP o EP para NTSC.

1 Inserte una cinta fuente en la otra videograbadora (para reproducir). Busque el punto donde desee iniciar la reproducción y ponga el aparato en modo de pausa de reproducción.

2 Inserte una cinta en esta videograbadora (para grabar). Busque el punto donde desee iniciar la grabación y presione II PAUSE.

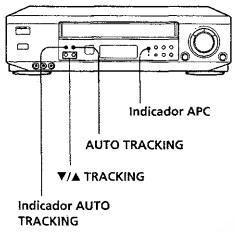
3 Presione ● REC en esta videograbadora para ajustarla en el modo de pausa de grabación.

4 Para iniciar la edición, presione las teclas II PAUSE de ambas videograbadoras.

Para finalizar la edición

Presione la tecla ■ STOP de ambas videograbadoras.

Ajuste de la imagen



Ajuste del seguimiento

Aunque la videograbadora ajusta el seguimiento de forma automática al reproducir una cinta, es posible que se produzcan distorsiones si la cinta se ha grabado en mal estado. En este caso, ajuste el seguimiento de forma manual.

Presione las teclas ▼/▲ TRACKING para obtener la imagen más nítida posible. Si no consigue una imagen nítida manualmente, presione la tecla AUTO TRACKING para volver al ajuste automático. En este caso, el indicador AUTO TRACKING parpadea.

Acerca de APC (Control de adaptación de imagen)

APC mejora automáticamente la calidad de grabación y reproducción adaptando la videograbadora al estado de los cabezales y la cinta de video.

Reproducción APC

APC funciona de forma automática con toda clase de cintas, incluidos los cassettes de alquiler y los que no se han grabado con APC.

Grabación APC

Siempre que se inserta una cinta y se inicia la grabación, la videograbadora se adapta a la cinta mediante la función APC (el indicador APC de la videograbadora parpadea rápidamente). Este ajuste se mantiene hasta que se expulse la cinta.

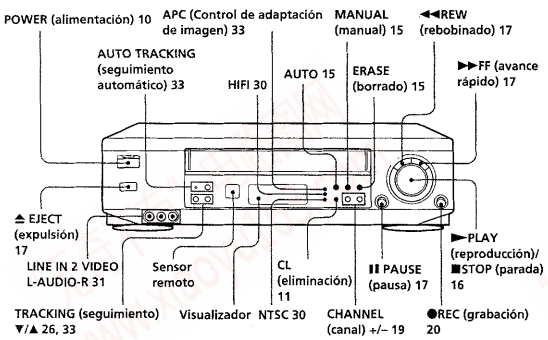
Nota

- Se produce una demora de unos segundos mientras la videograbadora analiza la cinta antes de iniciar la grabación.

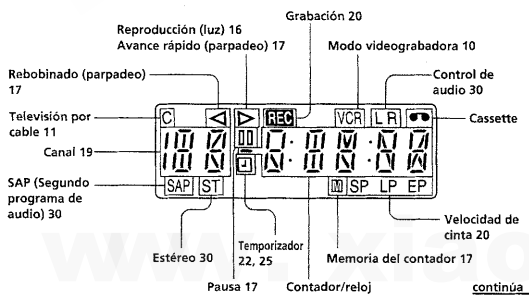
Indice visual

Consulte las páginas indicadas para obtener información más detallada.

Panel frontal



Indicadores del visualizador



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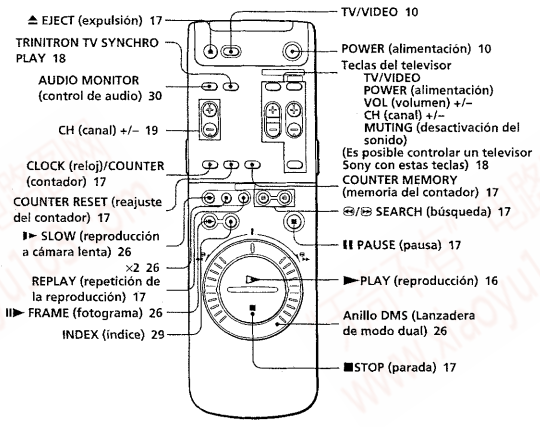
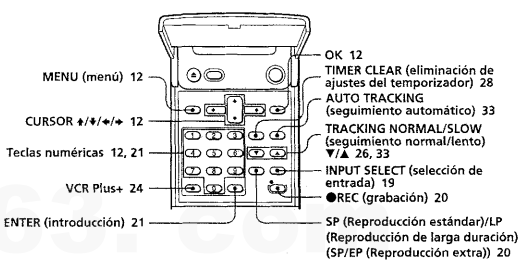
Control remoto


▲ EJECT (expulsión) 17
TRINITRON TV SYNCHRO PLAY 18
AUDIO MONITOR (control de audio) 30
CH (canal) +/– 19
CLOCK (reloj)/COUNTER (contador) 17
COUNTER RESET (reajuste del contador) 17
▮► SLOW (reproducción a cámara lenta) 26
×2 26
REPLAY (repetición de la reproducción) 17
II► FRAME (fotograma) 26
INDEX (índice) 29
TV/VIDEO 10
POWER (alimentación) 10
Teclas del televisor
TV/VIDEO
POWER (alimentación)
VOL (volumen) +/–
CH (canal) +/–
MUTING (desactivación del sonido)
(Es posible controlar un televisor Sony con estas teclas) 18
COUNTER MEMORY (memoria del contador) 17
⏮/⏭ SEARCH (búsqueda) 17
II PAUSE (pausa) 17
►PLAY (reproducción) 16
Anillo DMS (Lanzadera de modo dual) 26
■STOP (parada) 17


MENU (menú) 12
CURSOR ↑/↓/←/→ 12
Teclas numéricas 12, 21
VCR Plus+ 24
ENTER (introducción) 21
OK 12
TIMER CLEAR (eliminación de ajustes del temporizador) 28
AUTO TRACKING (seguimiento automático) 33
TRACKING NORMAL/SLOW (seguimiento normal/lento) ▼/▲ 26, 33
INPUT SELECT (selección de entrada) 19
●REC (grabación) 20
SP (Reproducción estándar)/LP (Reproducción de larga duración) (SP/EP (Reproducción extra)) 20

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SECTION 2
DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ② .
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Notes:
- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screws taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig.1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. Spread out the lock clamps (C) in the arrow direction slightly and remove the TM-1 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the chassis.
3. Remove the red screw ⑤ in the chassis, the red screw ⑥, and remove the holder in this order. (SLV-L45AR)
   Remove the screw ⑤ in the chassis, the screw ⑥, and the holder in this order. (SLV-L65HFAR/L75HFAR)
4. Remove the two screws ⑦ and two screws ⑧ of the mechanism unit. The two screws ⑧ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
5. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock clamps (D) of the chassis in the arrow direction so that they can be removed from the chassis.

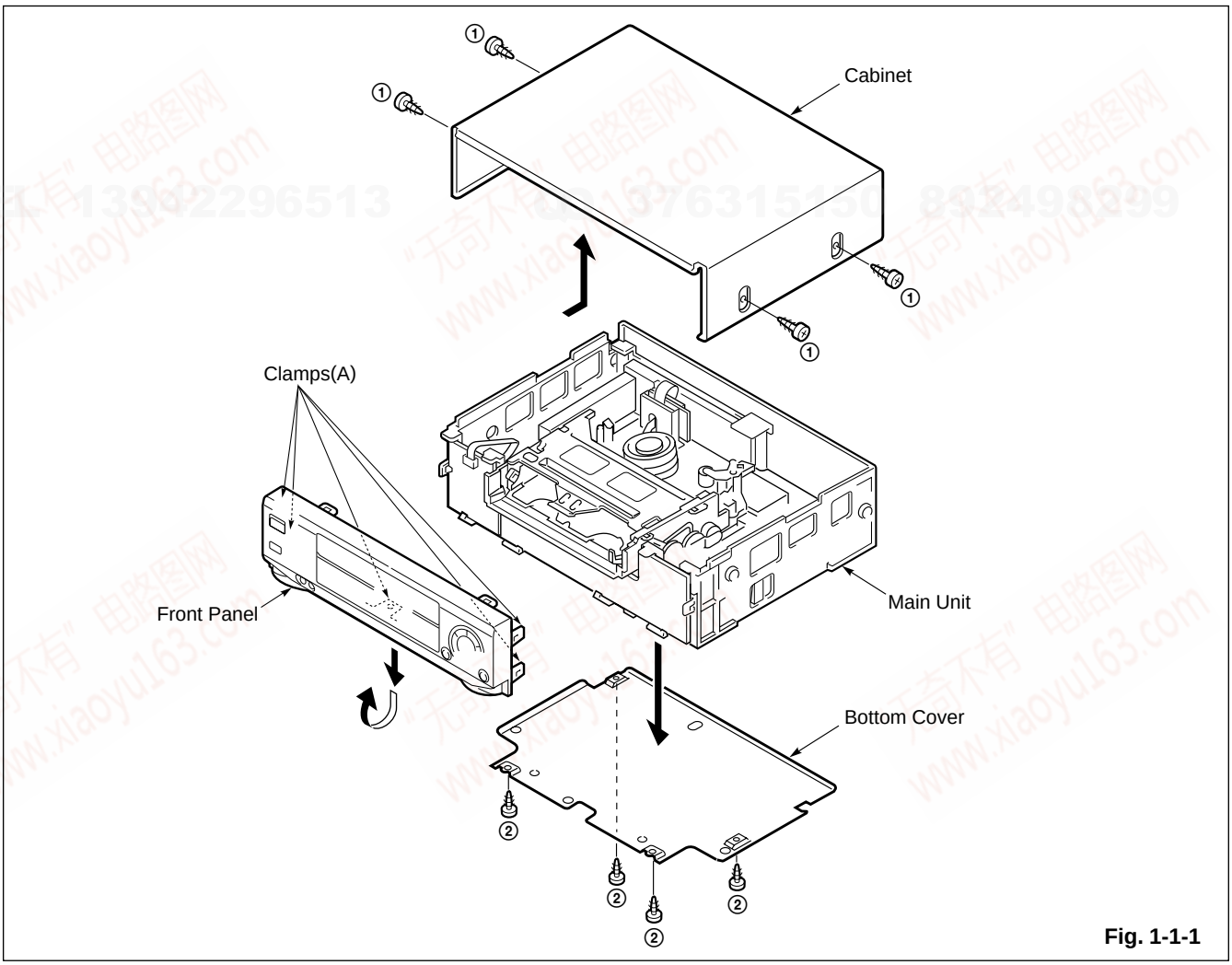

Fig. 1-1-1

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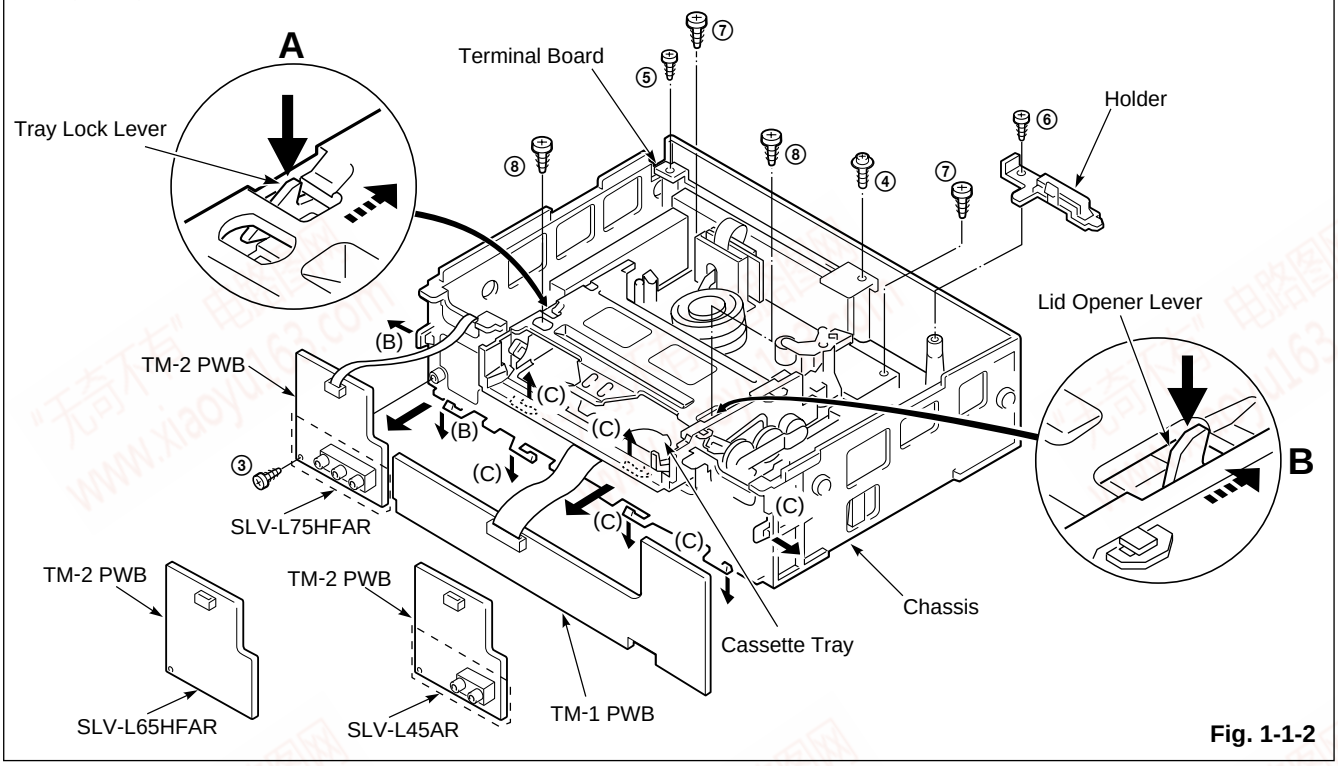

Fig. 1-1-2

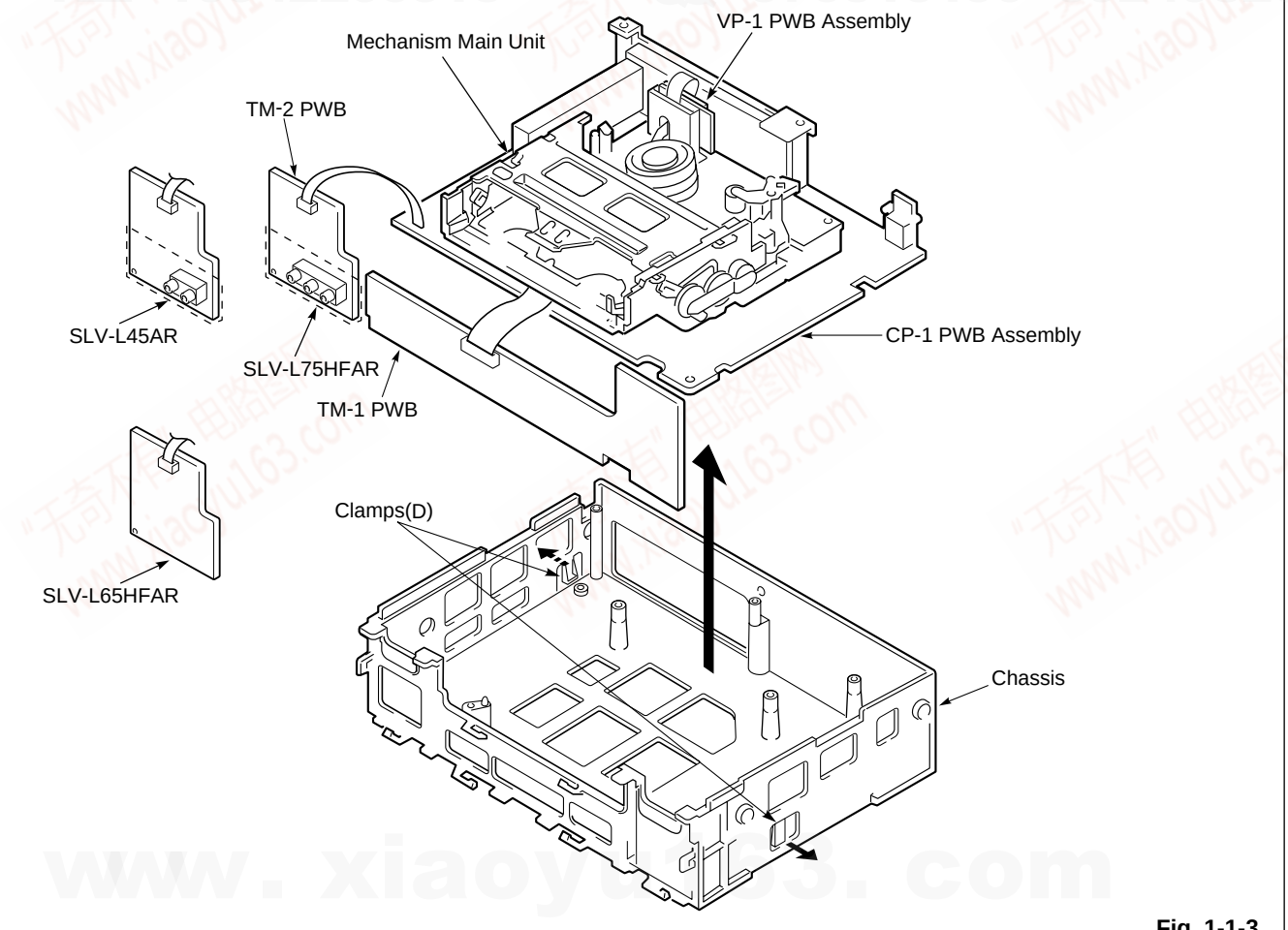

Fig. 1-1-3

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1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

1. Place the mechanism unit and main board up side down as a whole on a flat surface with foil side of the main board facing up.
2. Operate the unit using the buttons on TM-1 PWB or the remote control.

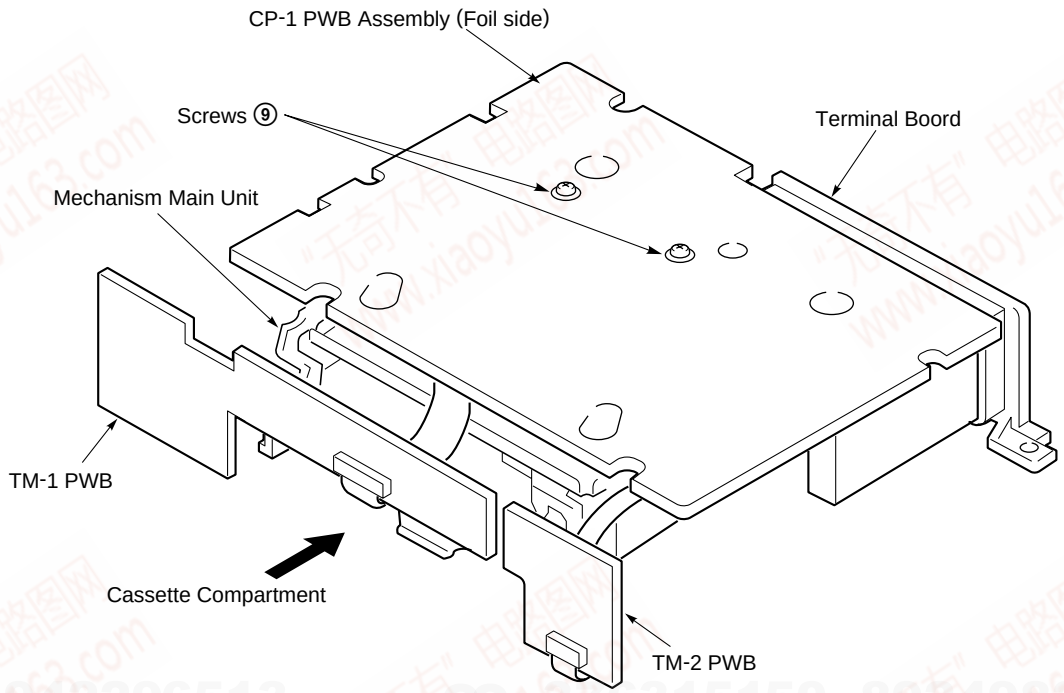

Fig. 1-1-4

1-3. INSTALLATION OF THE FRONT PANEL

When installing the front panel to the chassis after repaires and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
2. Set the cassette door to half-opened state as shown in Fig. 1-1-5, and install the front panel to the chassis.

Note: Opened cassette door position does not install the front panel to the chassis.

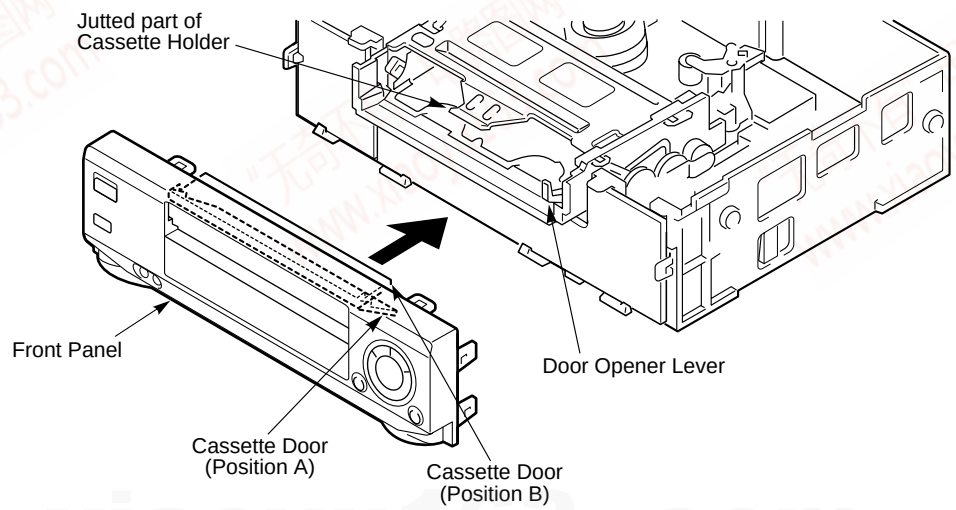

Fig. 1-1-5

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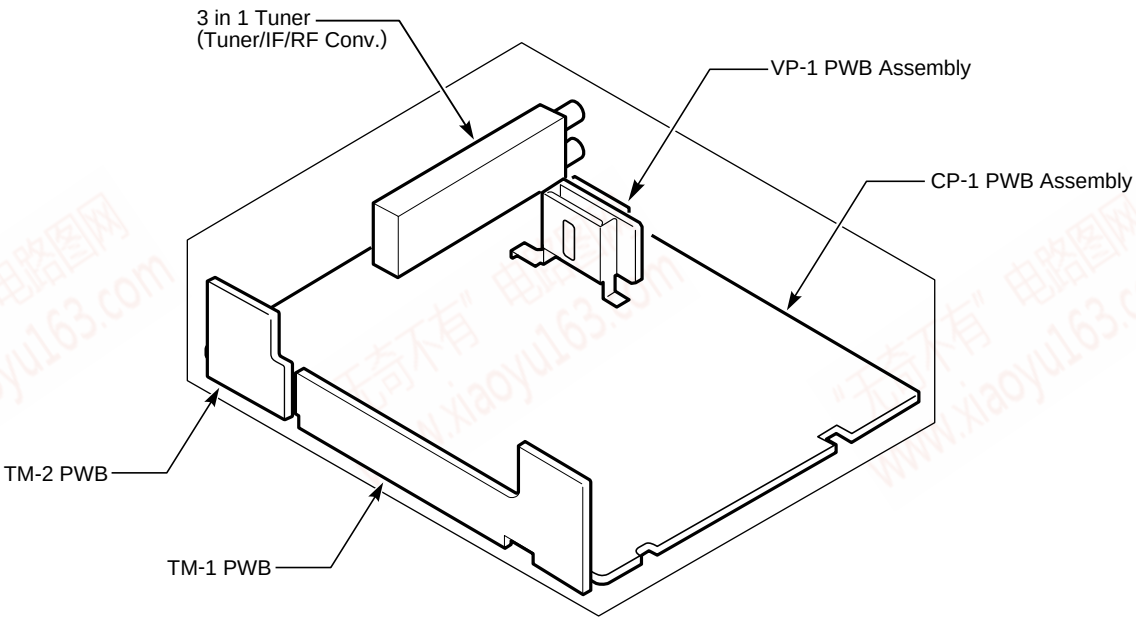
SECTION 3
DIAGRAMS

CIRCUIT BOARDS LOCATION



NOTES:

1. All resistance values in "OHMS" unless otherwise noted.
   (K=1,000 ; M=1,000,000)
2. All capacitance values in "μF" unless otherwise noted.
   p=pico farad ; μ,u or U=micro farad
3. All inductance values in "μH" unless otherwise noted.
   μ,u or U=micro henry ; m=milli henry

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

EXPLANATORY NOTES (EXAMPLES)

Resistor	10K:16J means 10kilo ohm ±5%, 1/16watt max.
	1M:1/10K means 1mega ohm ±10%, 1/10watt max.
Capacitor	0.047:F means 0.047micro farad, Ftype.
Chemical capacitor	
	10:16 means 10micro farad, 16volt max.
Inductor	330:J means 330micro henry ±5%
	470:K means 470micro henry ±10%

PAL-B-EX

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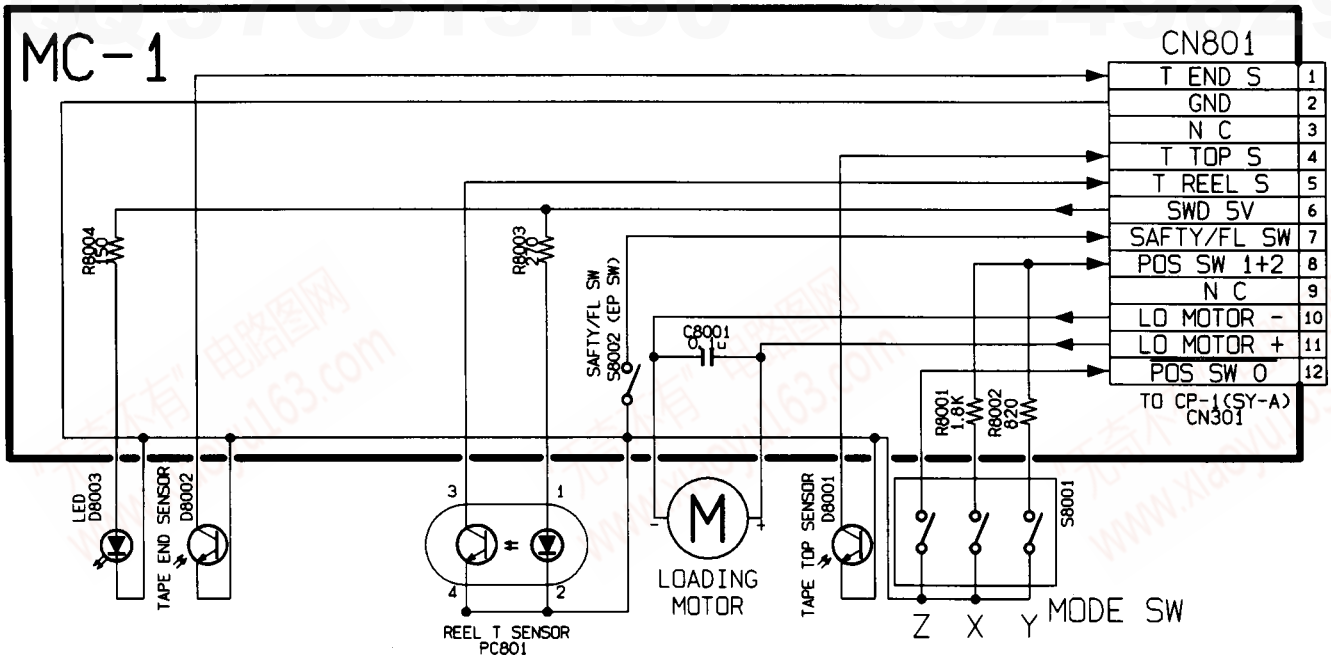
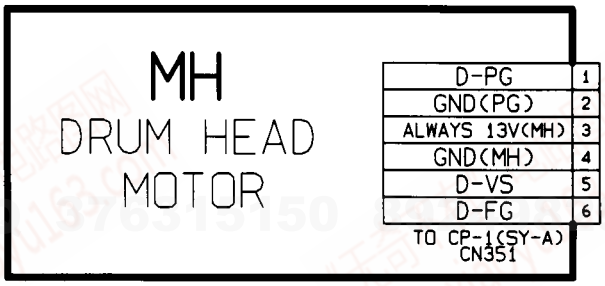
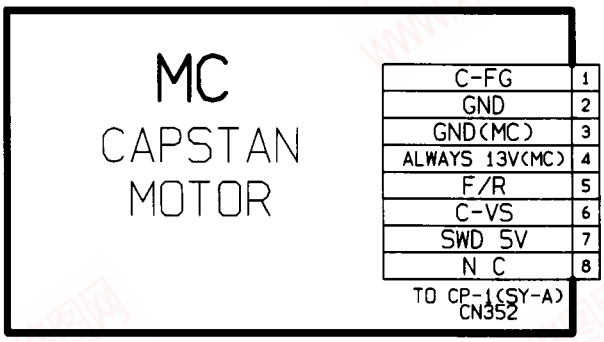
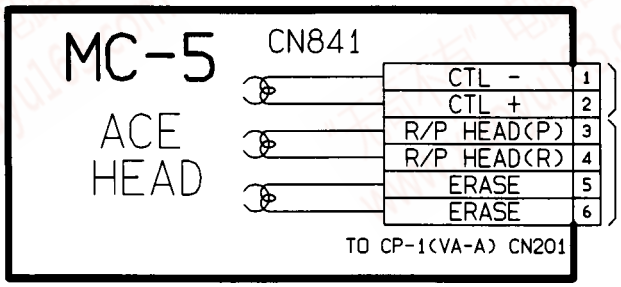
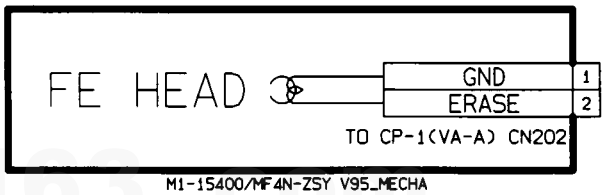
MECHANISM CONNECTION DIAGRAM











M1-15400/MF4N-ZSY V95_MECHA

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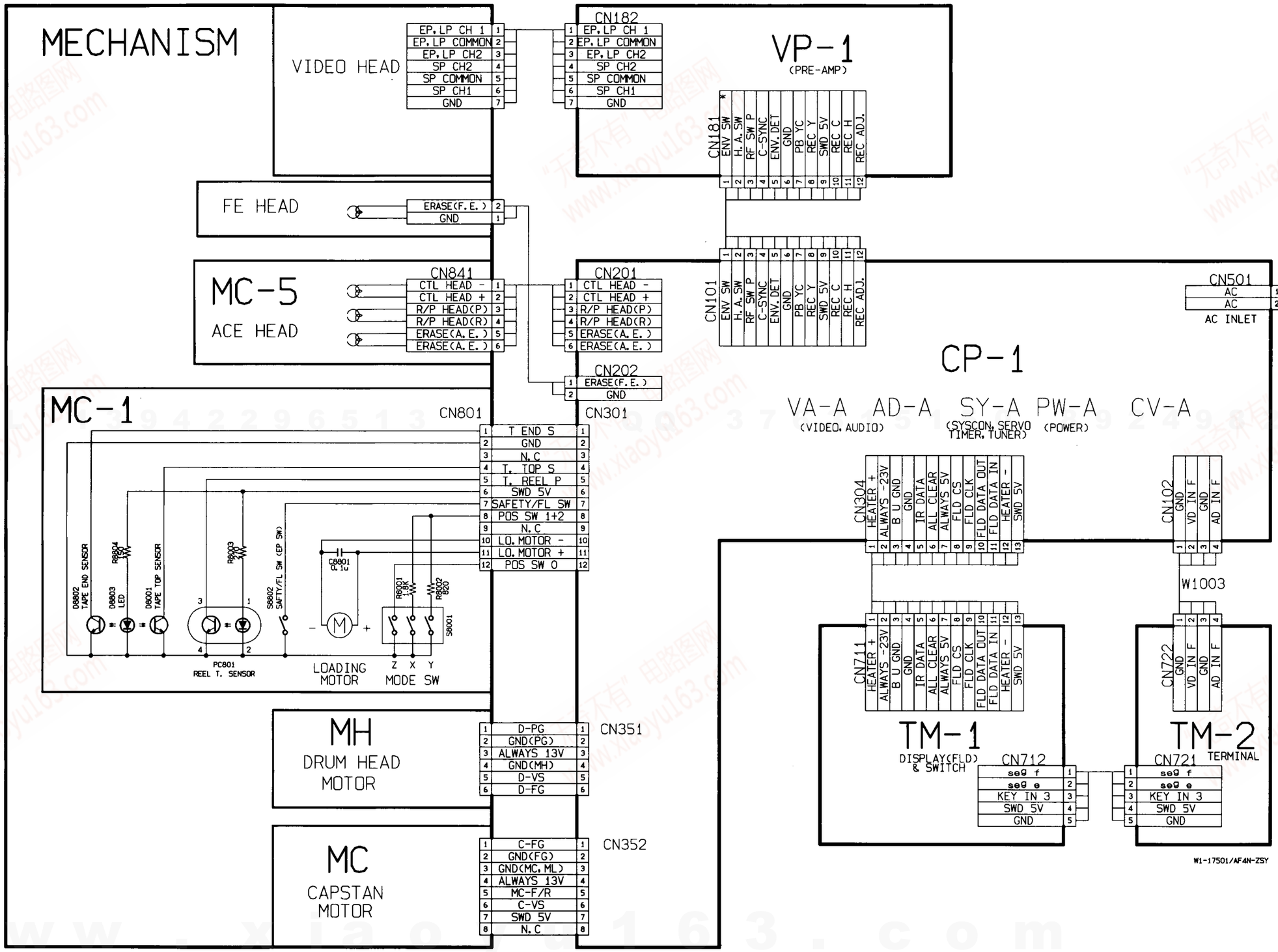
OVERALL WIRING DIAGRAM (SLV-L45AR)



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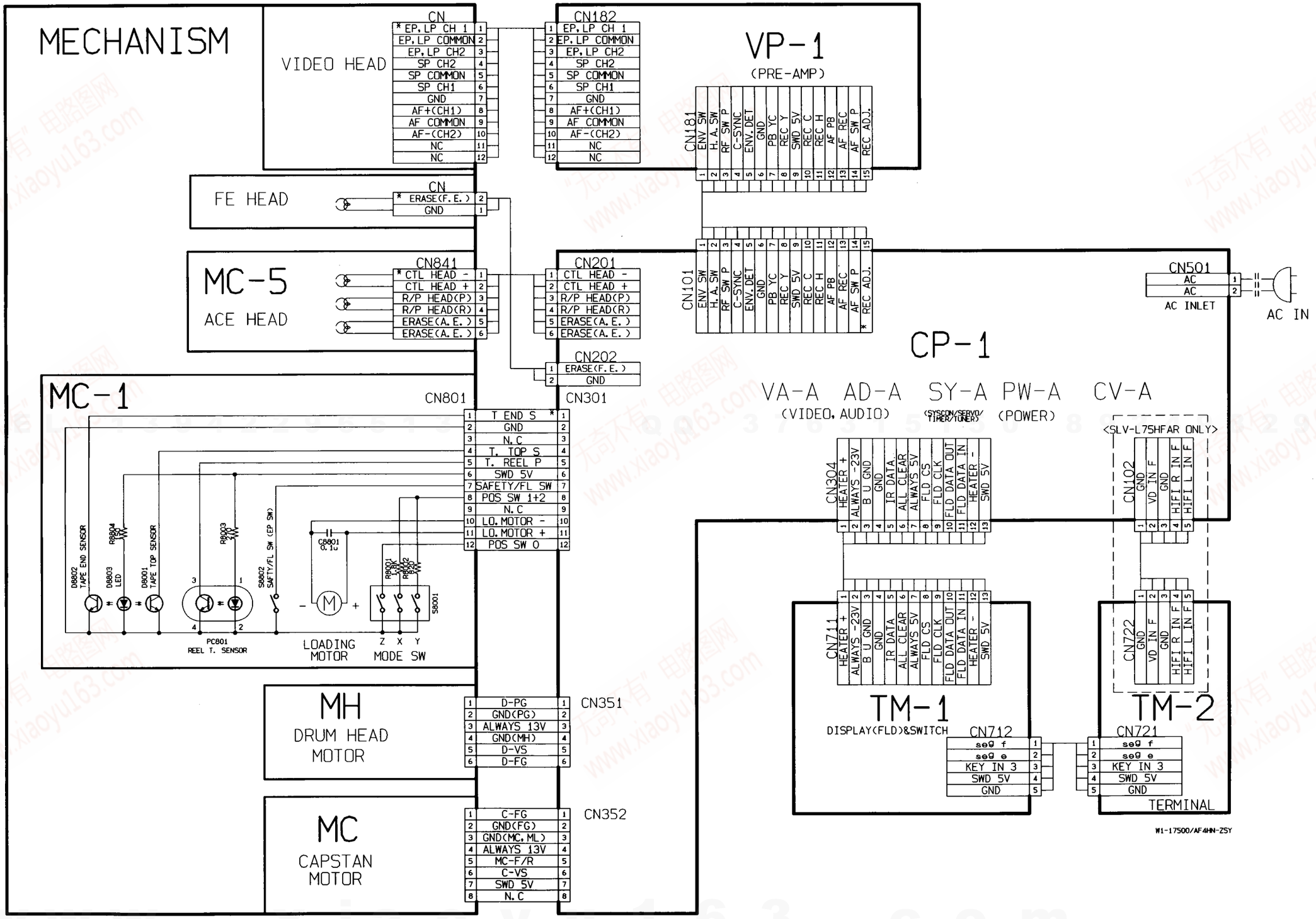
OVERALL WIRING DIAGRAM (SLV-L65HFAR/L75HFAR)



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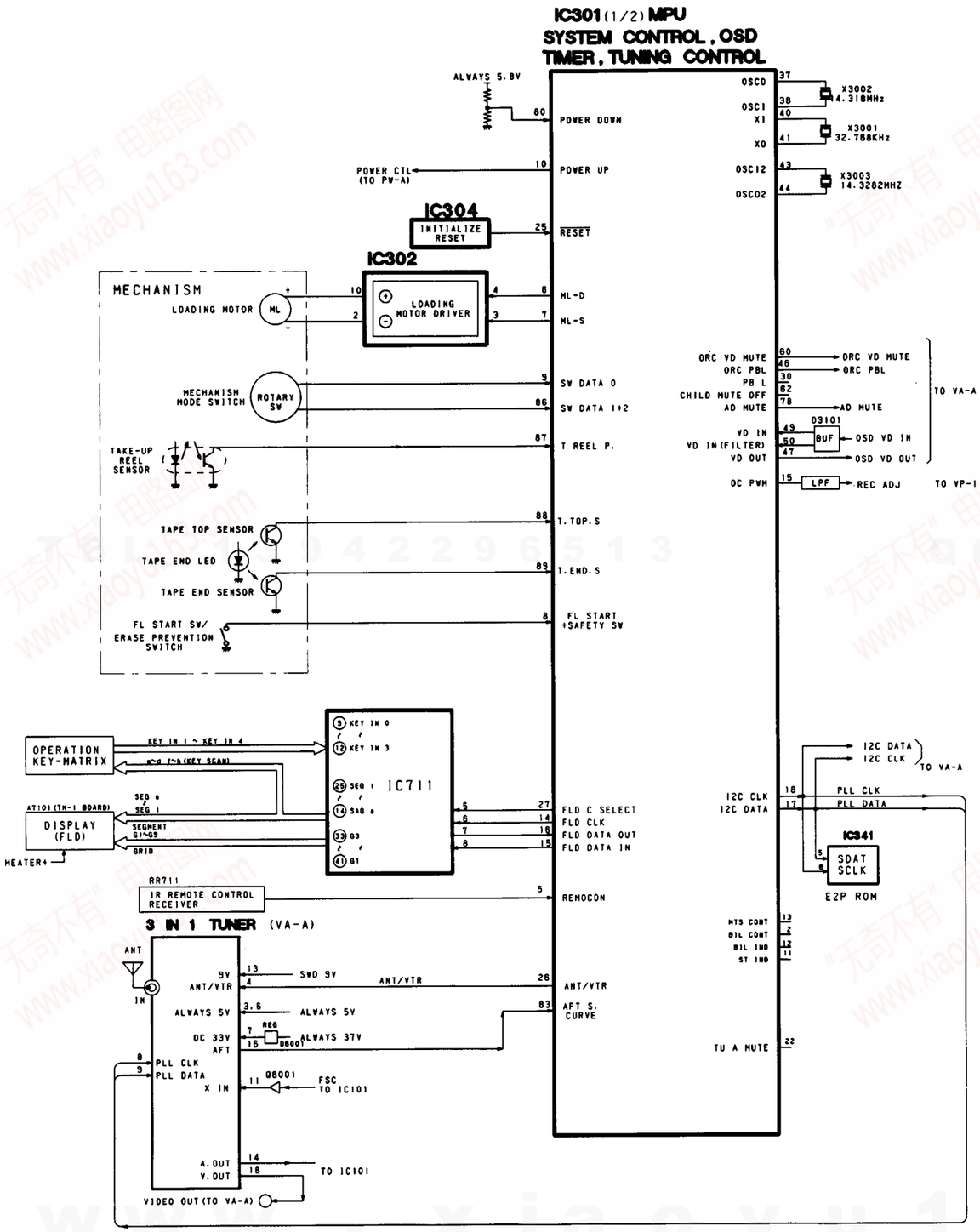
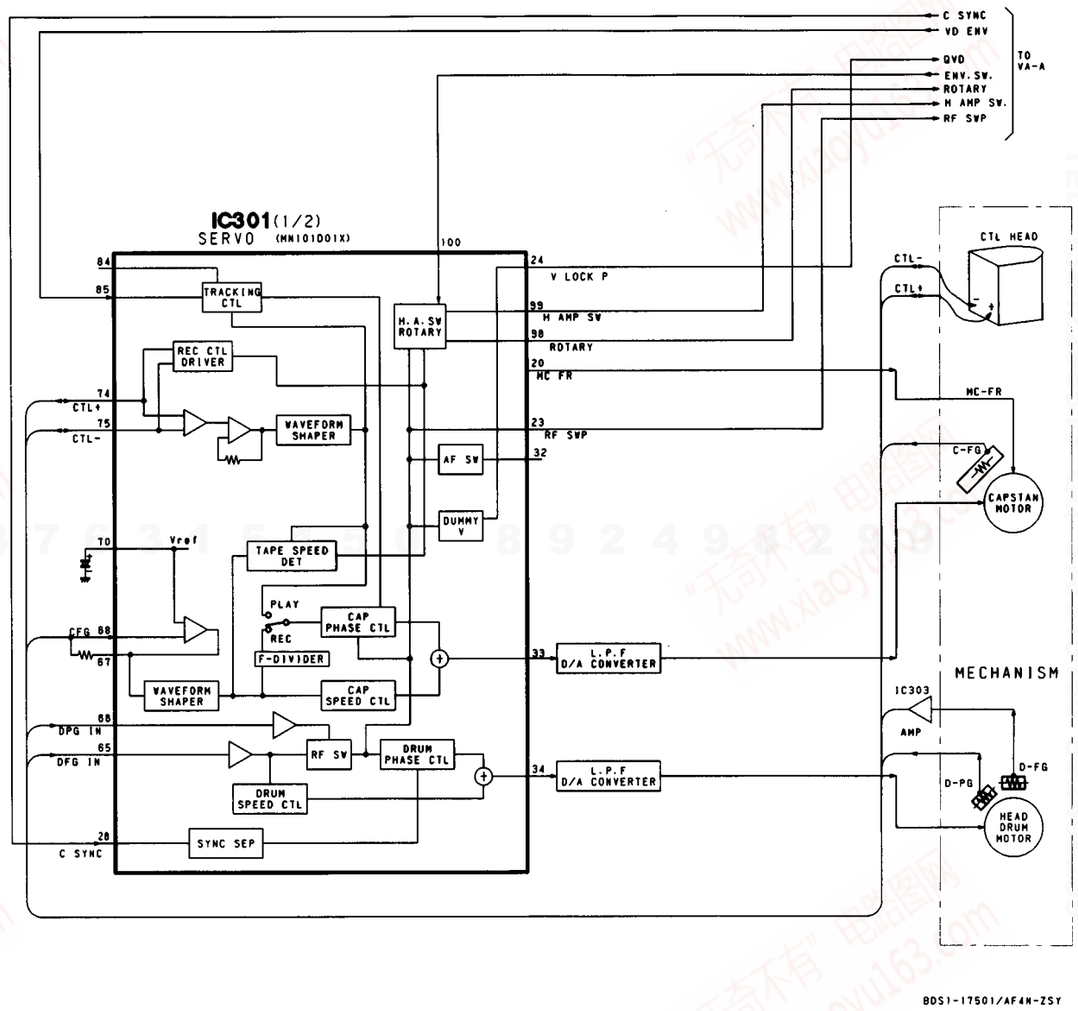
SYSTEM CONTROL & SERVO CIRCUIT DIAGRAM (SLV-L45AR)





BDS1-17501/AF4N-ZSY

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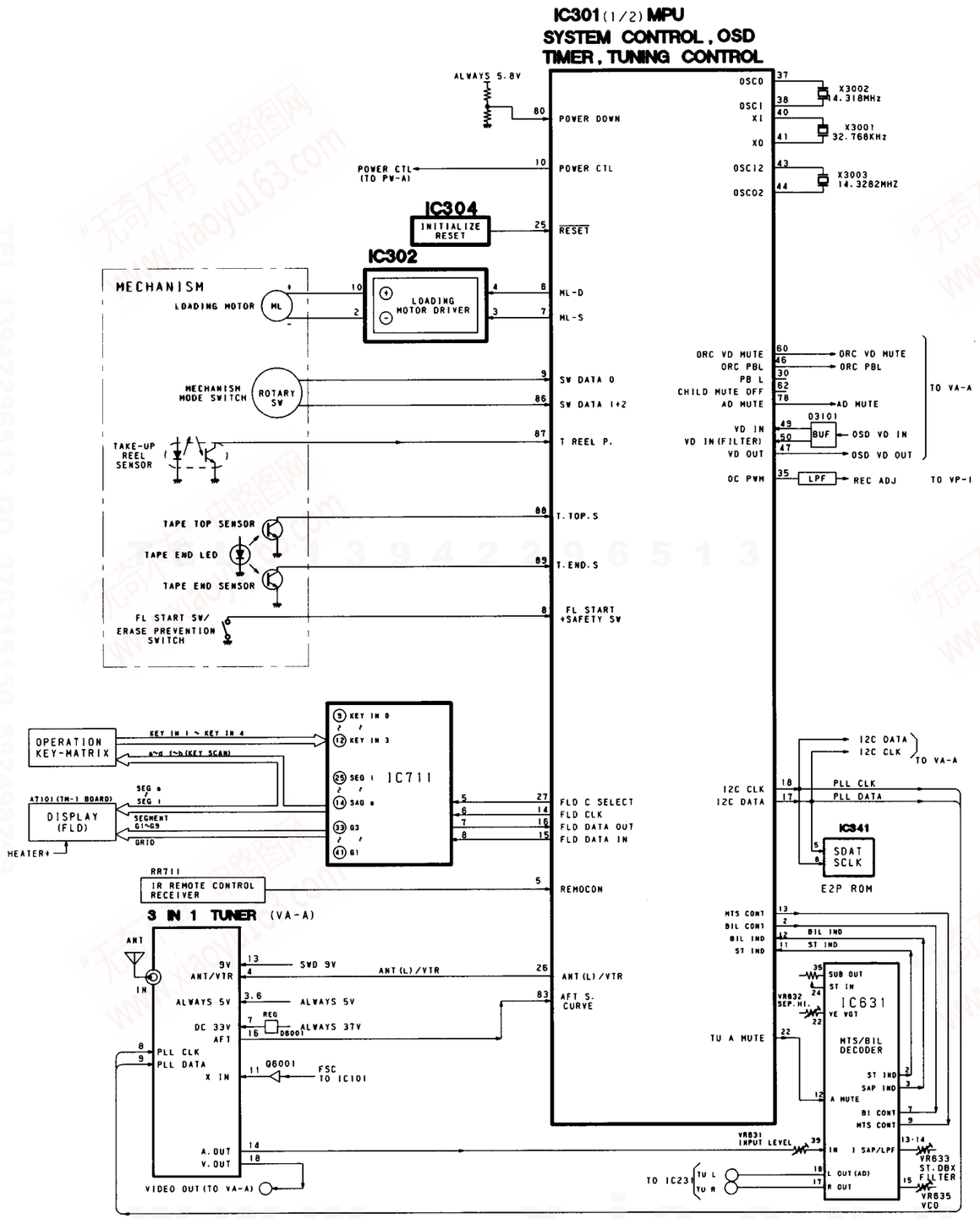
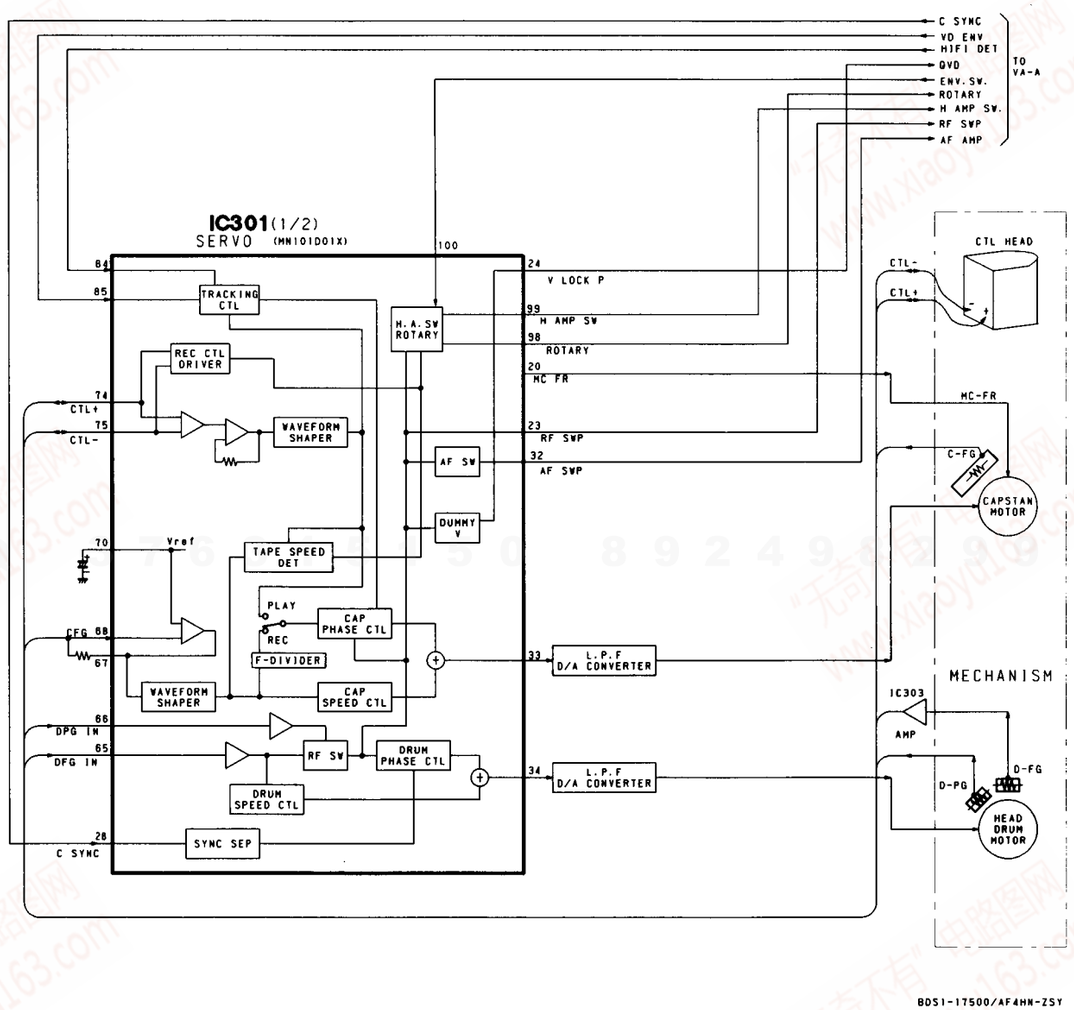
SYSTEM CONTROL & SERVO CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)





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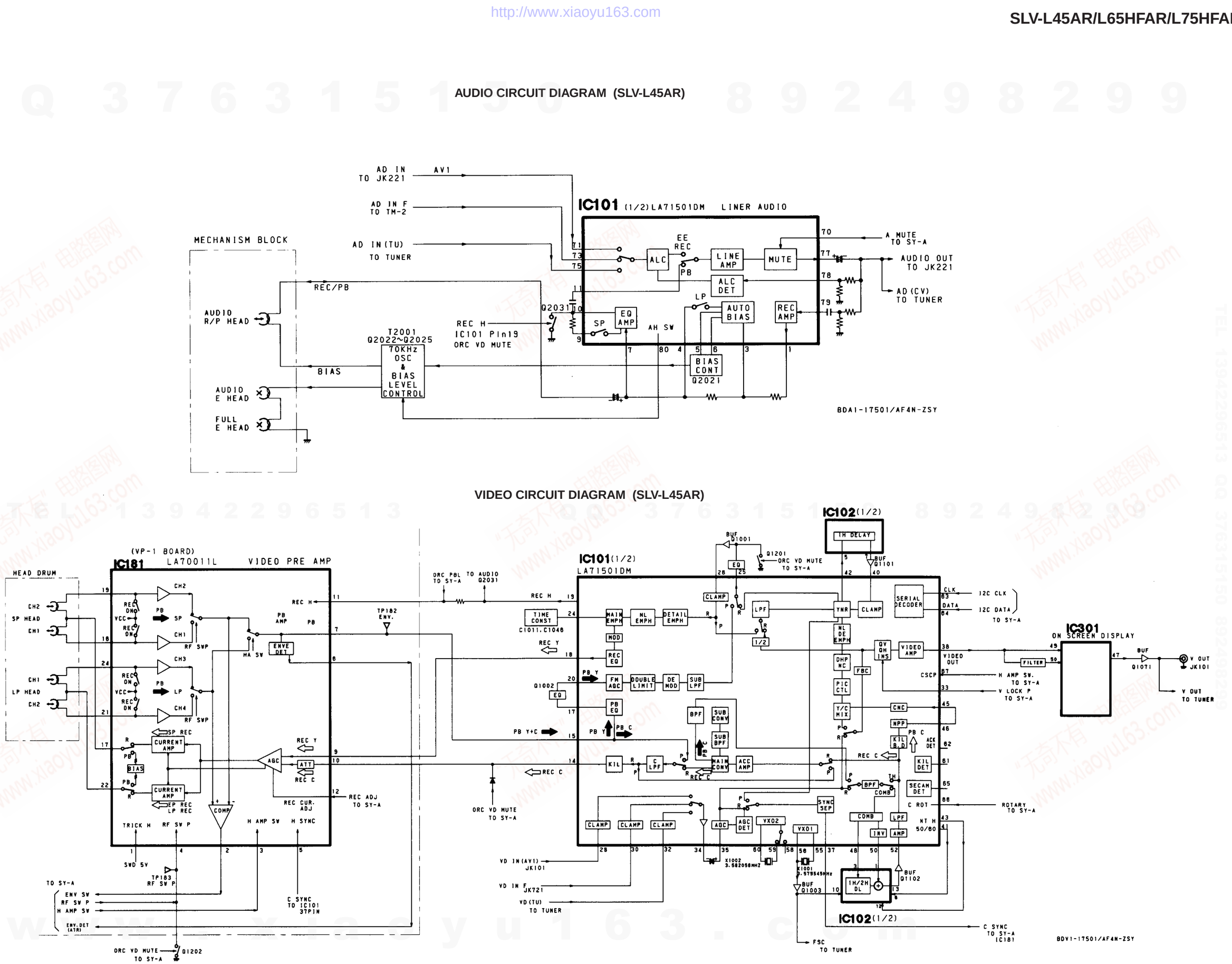
AUDIO CIRCUIT DIAGRAM (SLV-L45AR)

VIDEO CIRCUIT DIAGRAM (SLV-L45AR)



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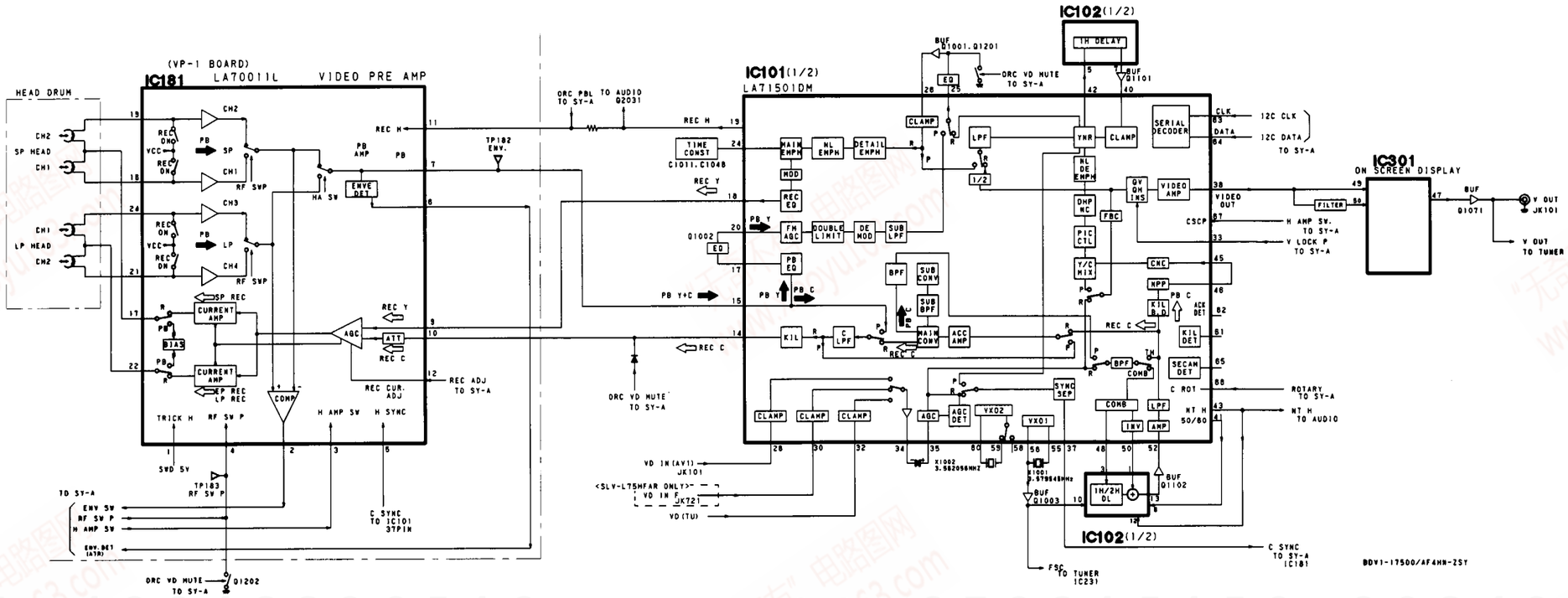
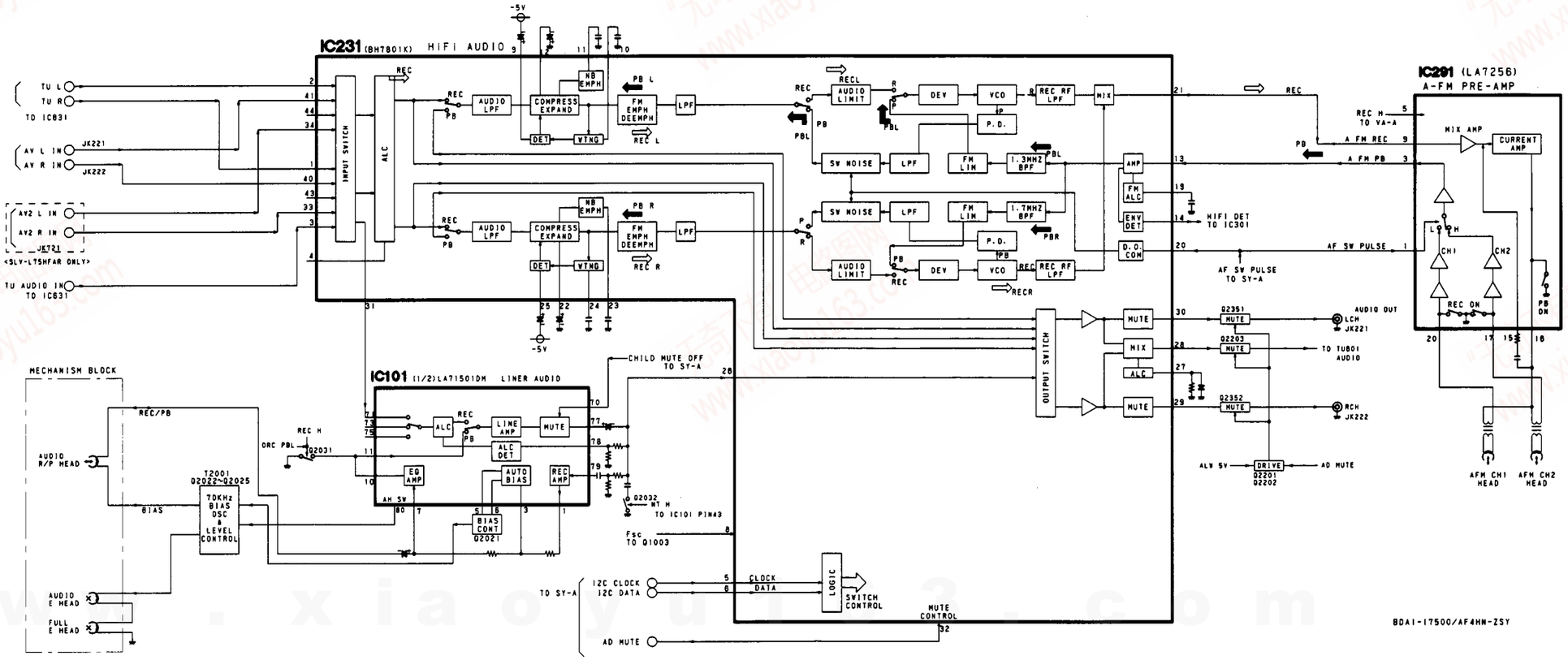
VIDEO CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



AUDIO CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



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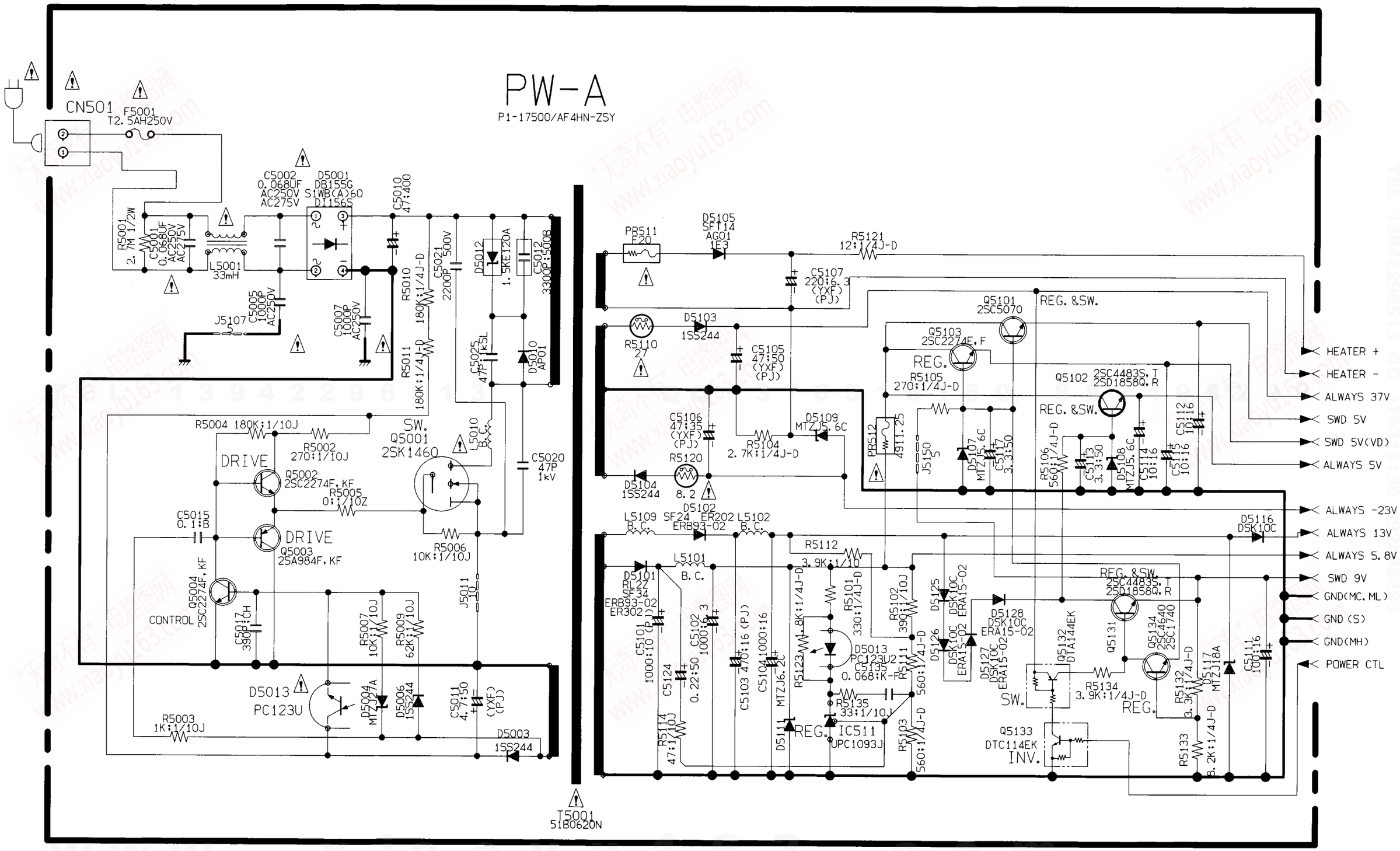
SECTION 4
SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

CP-1 BOARD (PW-A) POWER SUPPLY CIRCUIT DIAGRAM



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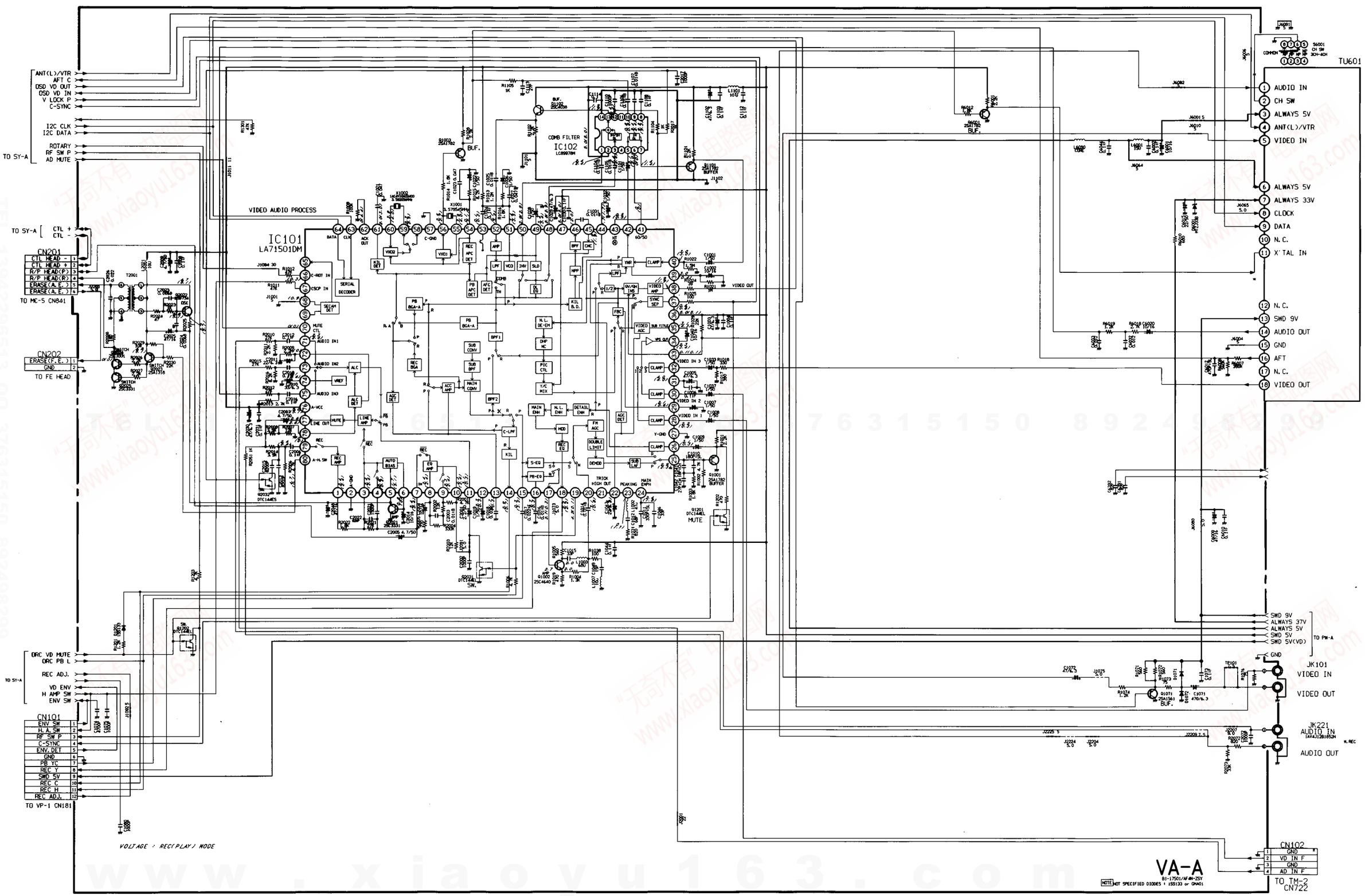
CP-1 BOARD (VA-A) VIDEO, AUDIO & TUNER CIRCUIT DIAGRAM (SLV-L45AR)



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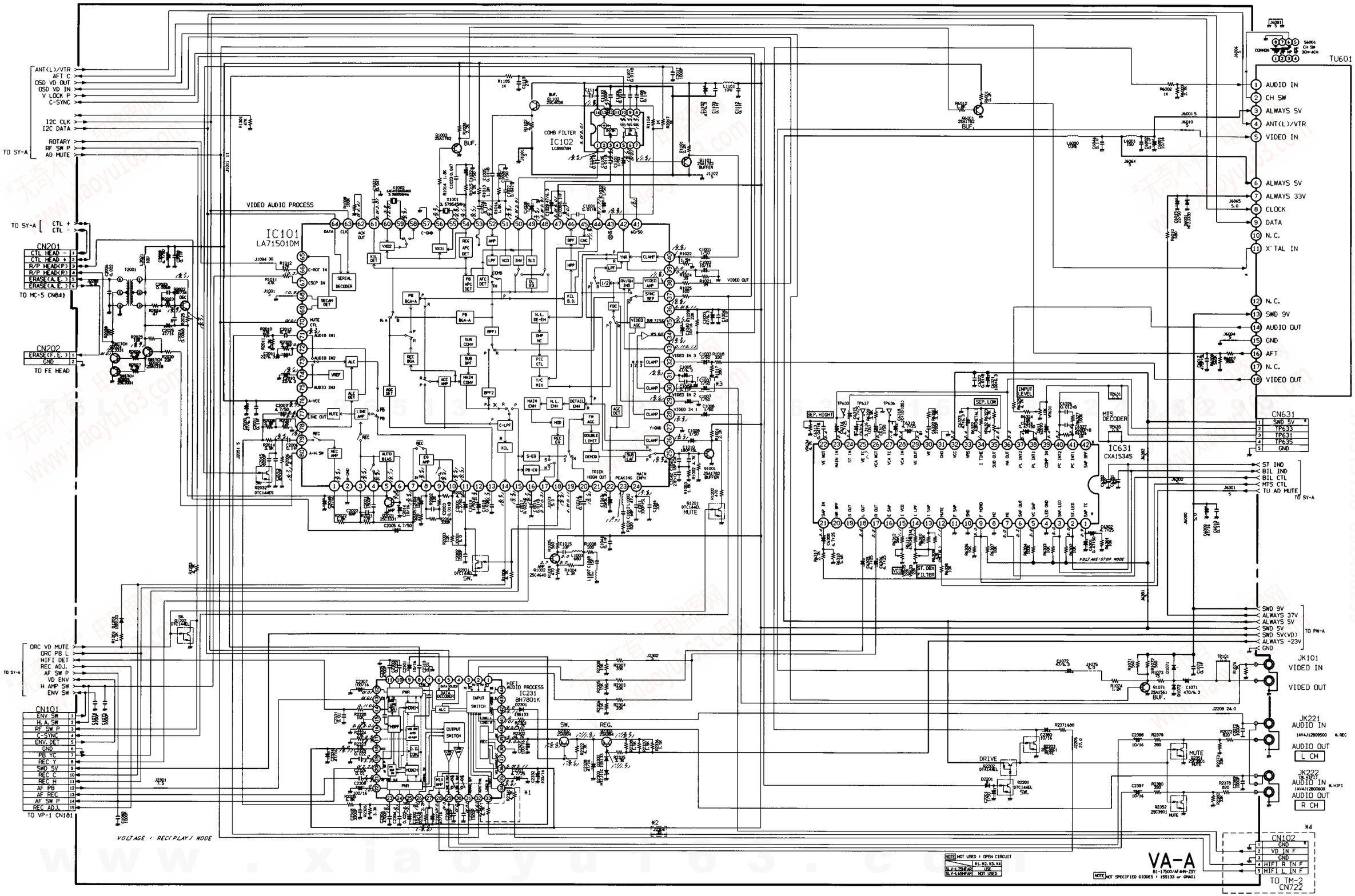
CP-1 BOARD (VA-A) VIDEO, AUDIO & TUNER CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



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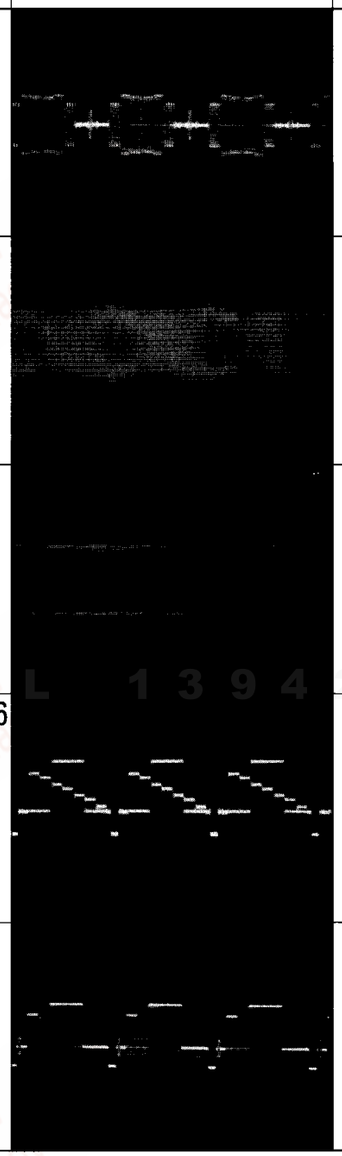
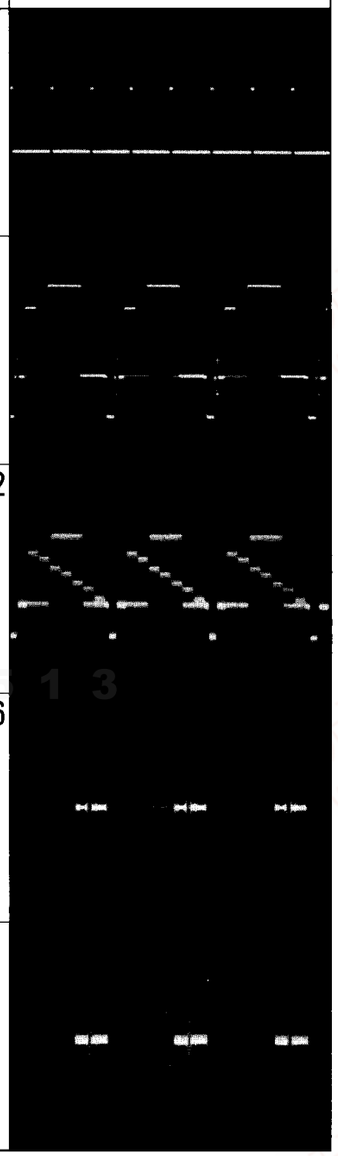
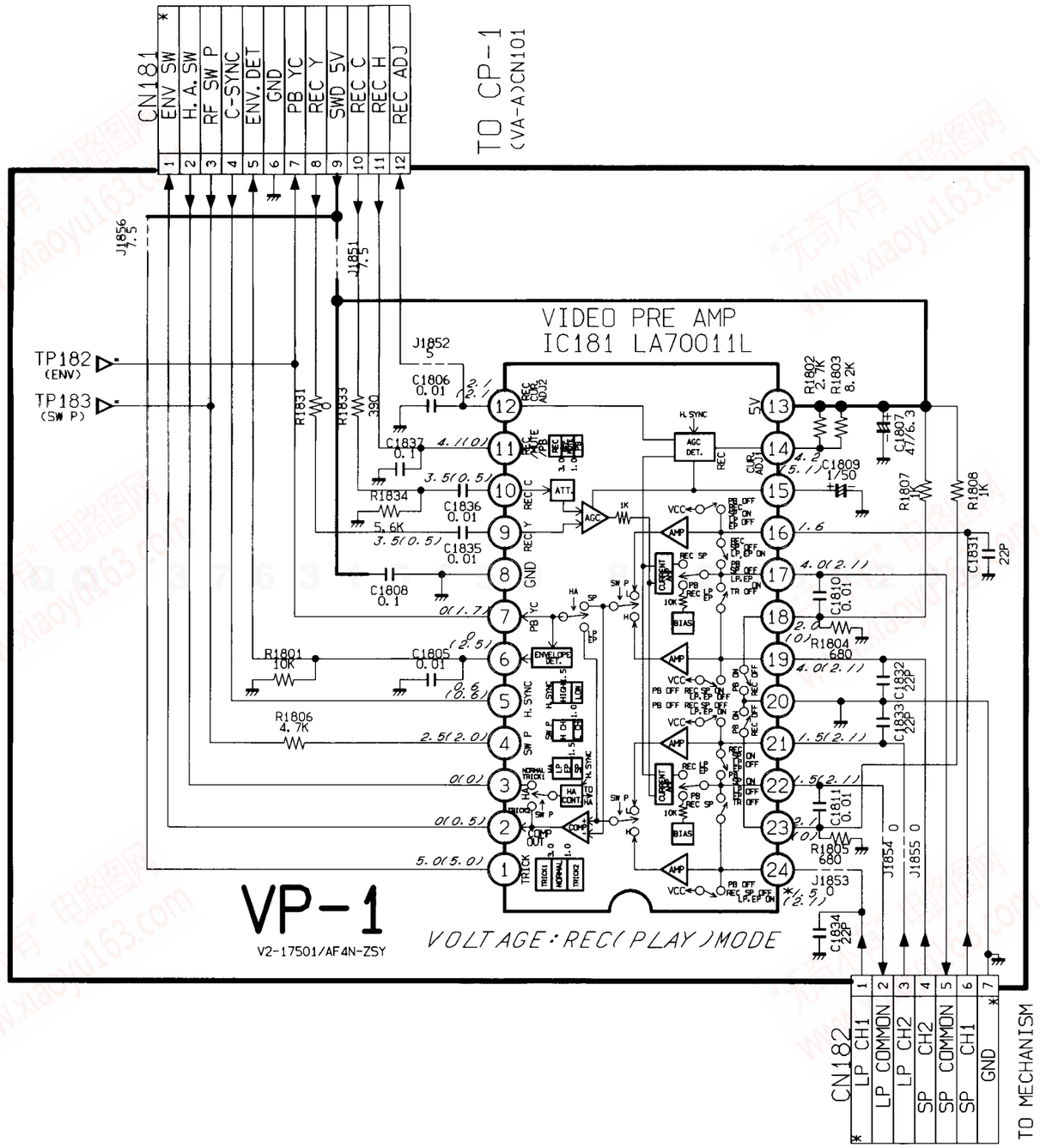
VIDEO CIRCUIT WAVEFORMS

TEST LOCATION	WAVE FORM	TEST LOCATION	WAVE FORM
IC101 PIN14 REC 0.4Vp-p (REC C)		IC101 PIN37 REC, PLAY 4Vp-p (C SYNC)	
IC101 PIN15 PLAY 0.25Vp-p (PB Y, C)		IC101 PIN38 REC, PLAY 2Vp-p (VIDEO OUT)	
IC101 PIN18 REC 0.2Vp-p (REC Y)		IC101 PIN40, 42 REC, PLAY 0.35Vp-p	
IC101 PIN25, 26 REC, PLAY 0.5Vp-p		IC101 PIN45, 46 PLAY 0.4Vp-p	
IC101 PIN28 REC 1Vp-p (VIDEO IN)		IC101 PIN48, 50, 52 REC, PLAY 0.25Vp-p	

WF-V-PG2ZK

VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM (SLV-L45AR)



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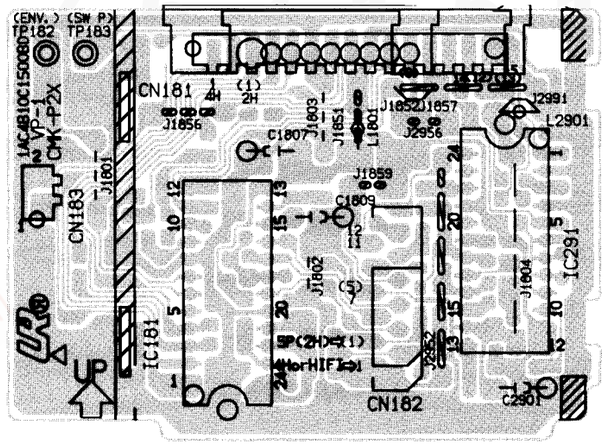
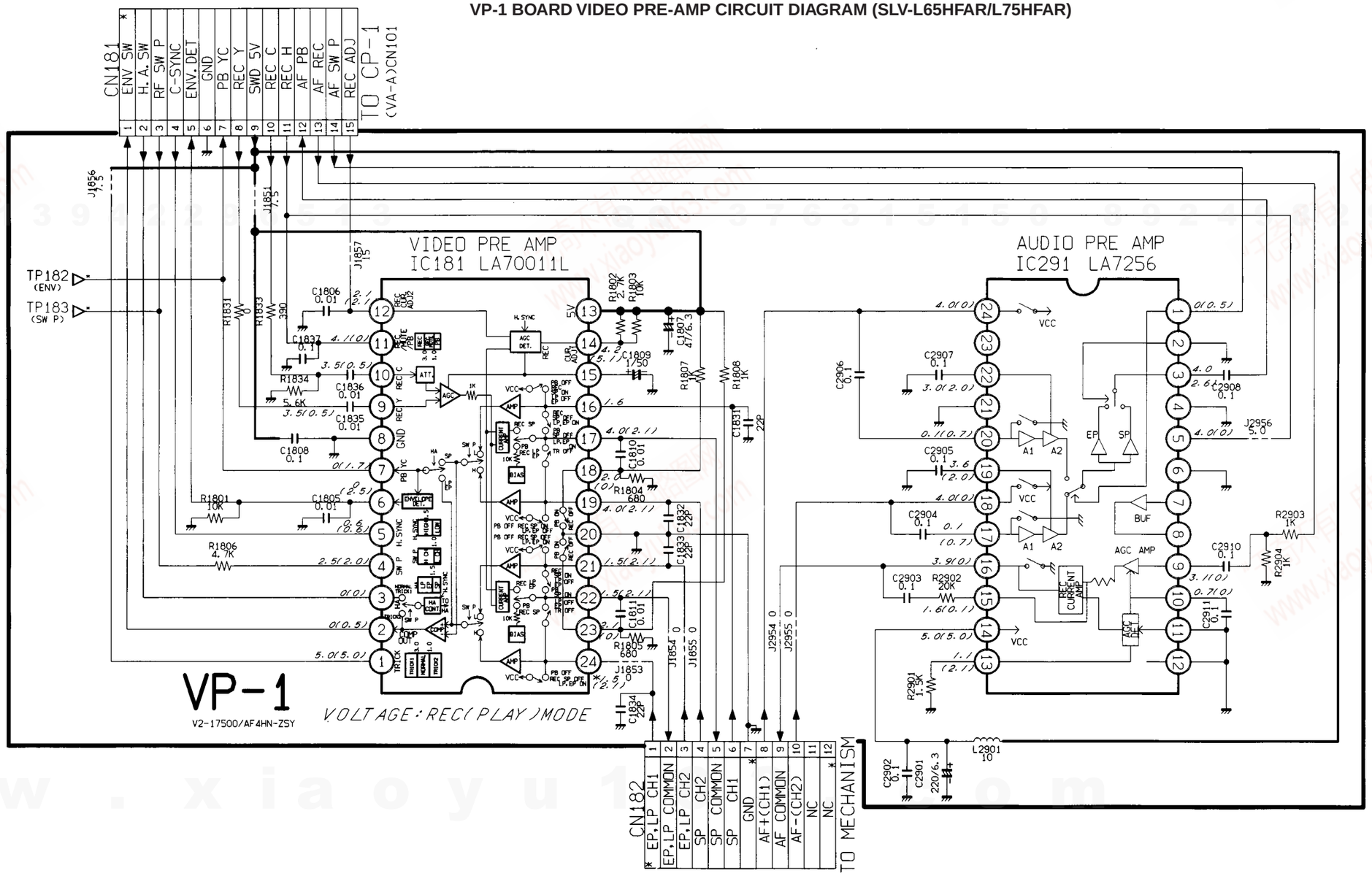
VP-1 P.W.B.



- There are few cases than the part isn't mounted in this model is printed on this diagram.

VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



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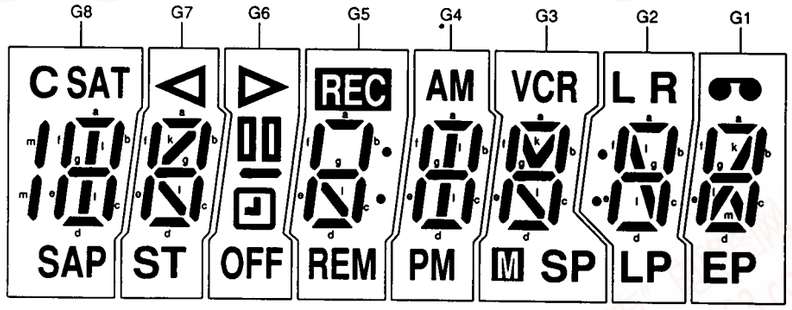
A7101 DISPLAY (FLD) GRID / ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

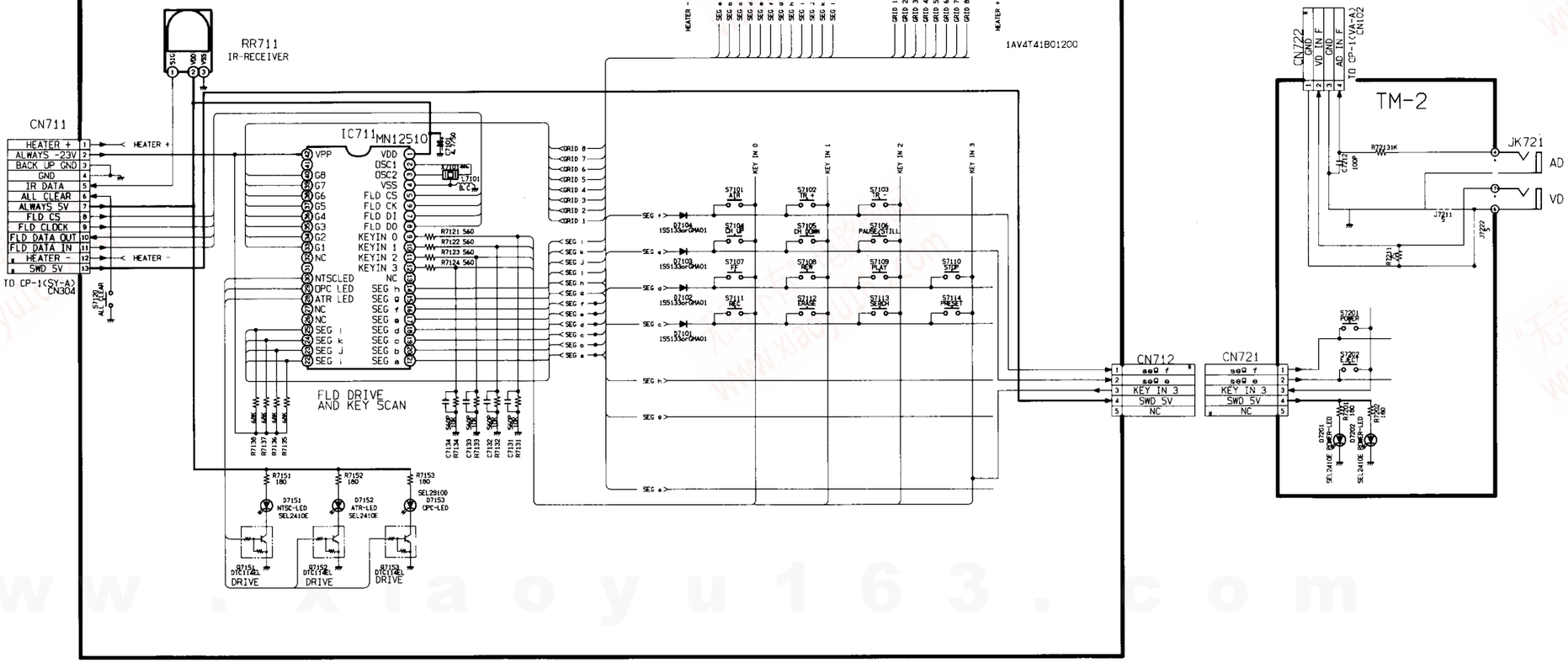


ANODE CONNECTION

GRID / SEGMENT	G8	G7	G6	G5	G4	G3	G2	G1
a	C	◁	▷	REC	AM	VCR	L	
b	SAT	k		—	—	k	R	k
c	a	a	—	a	a	a	a	a
d	b	b		b	b	b	b	b
e	c	c	—	c	c	c	c	c
f	d	d	—	d	d	d	d	d
g	e	e	—	e	e	e	e	e
h	f	f	—	f	f	f	f	f
i	g	g	—	g	g	g	g	g
j	l	l	—	f	l	l	l	l
k	m	—	—	• •	—	M	• •	m
l	SAP	ST	OFF	REM	PM	SP	LP	EP

GR-01200

TM-1, TM-2 BOARDS OPERATION KEY, DISPLAY & TIMER CIRCUIT DIAGRAM (SLV-L45AR)



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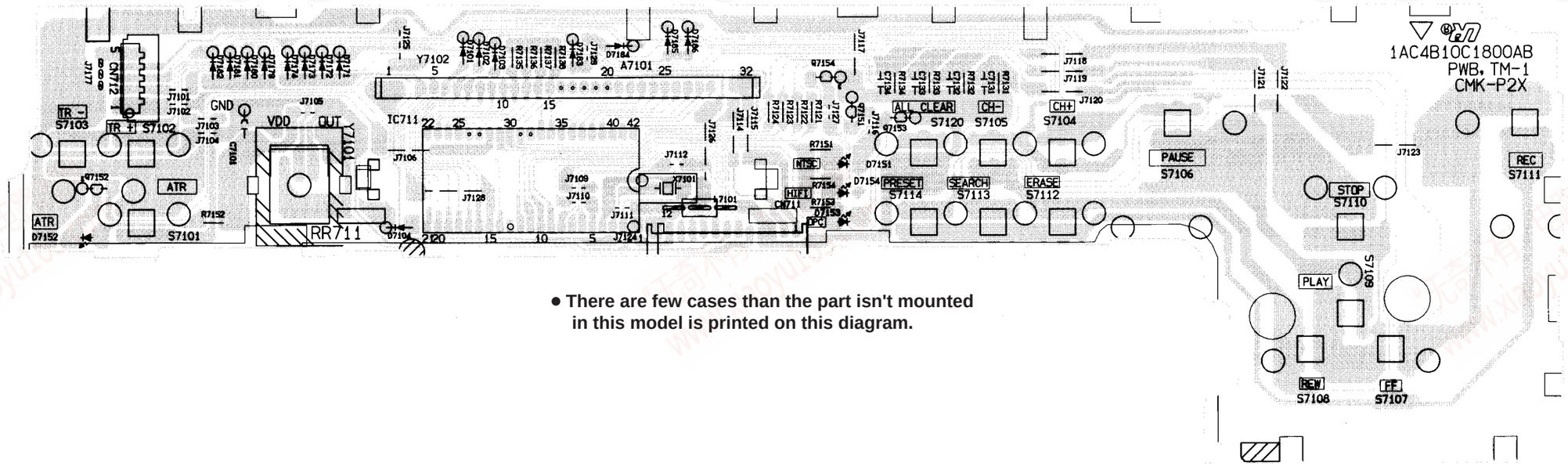
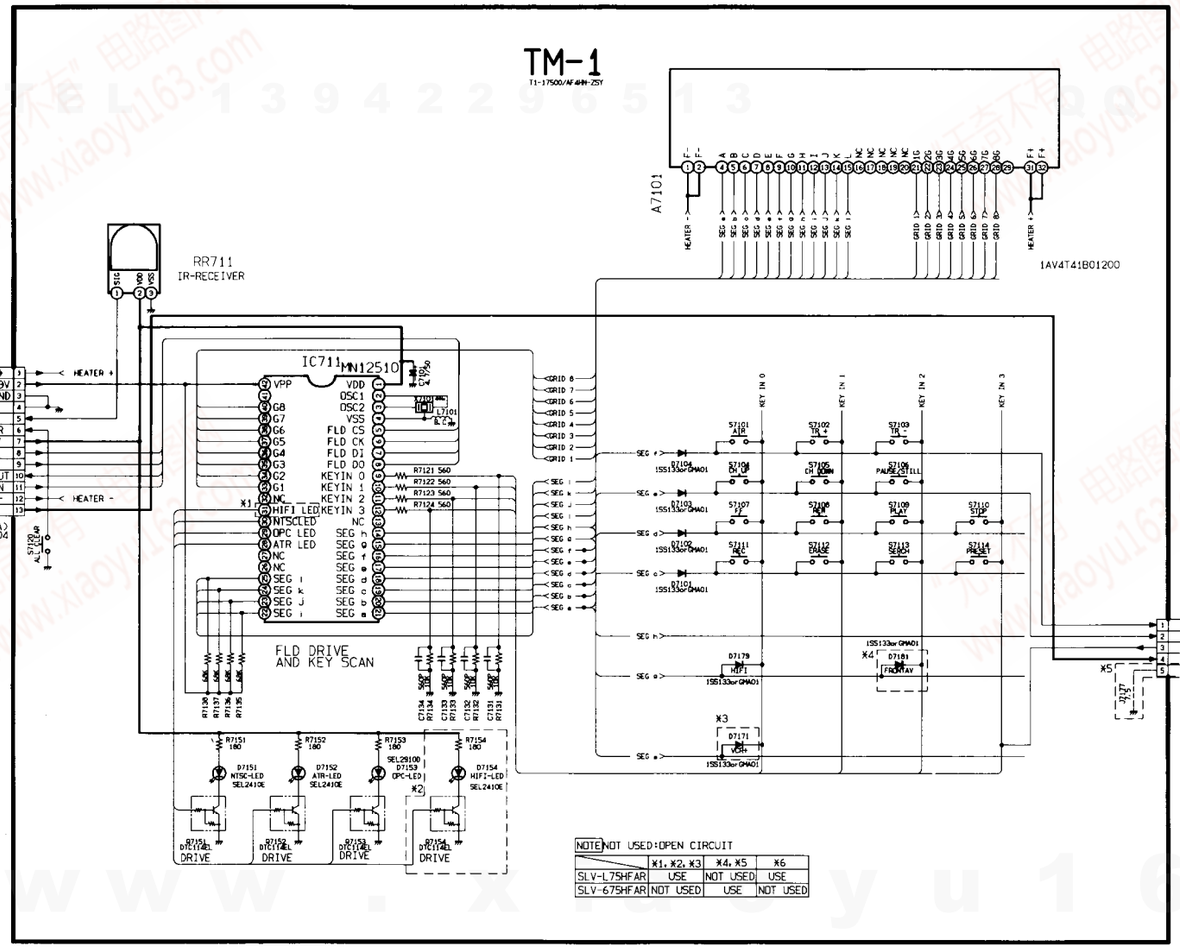
TM-1 P.W.B.

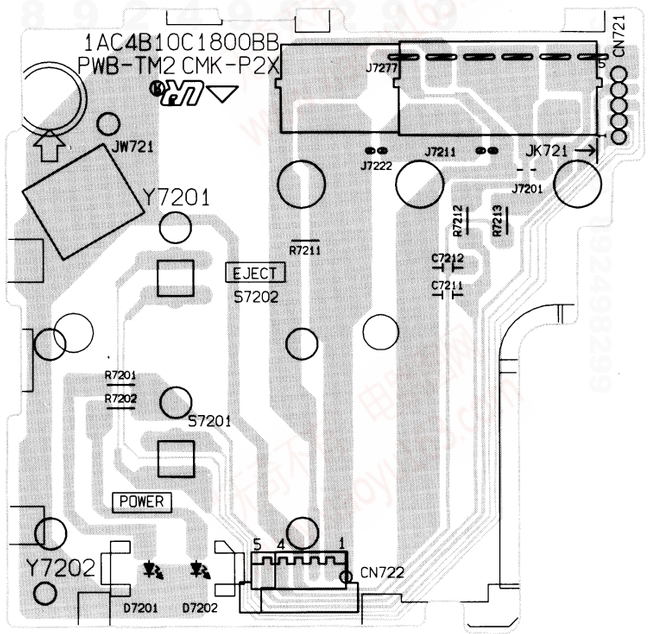


● There are few cases than the part isn't mounted in this model is printed on this diagram.

TM-1,TM-2 BOARDS OPERATION KEY, DISPLAY & TIMER CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



TM-2 P.W.B.



● There are few cases than the part isn't mounted in this model is printed on this diagram.

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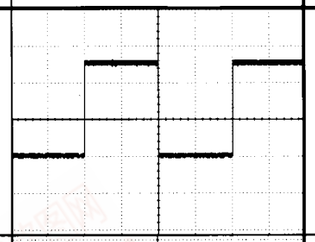
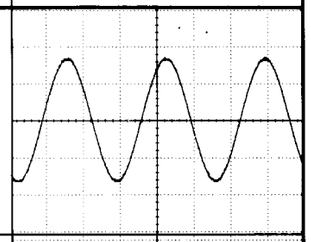
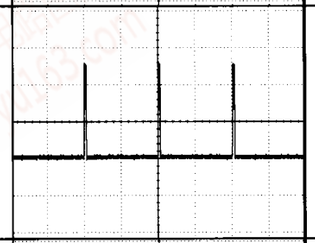
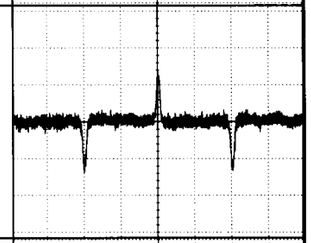
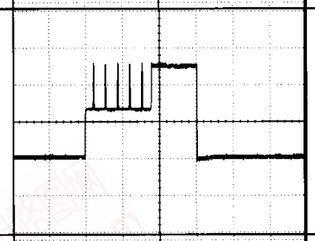
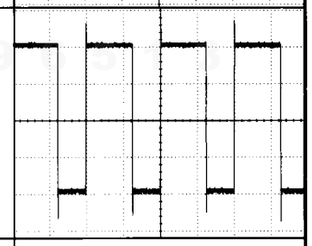
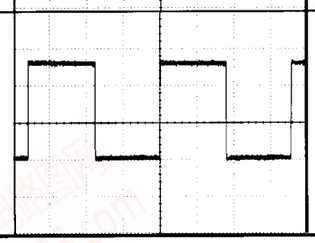
SERVO CIRCUIT WAVEFORMS

TEST LOCATION	WAVEFORM	TEST LOCATION	WAVEFORM
IC301 PIN 23 REC/PB RF SWP 2V/div. 10ms/div.		IC301 PIN 65 REC/PB DFG 500mV/div. 500μs/div.	
IC301 PIN 24 STILL 2V/div. 10ms/div.		IC301 PIN 66 REC/PB DPG 100mV/div. 10ms/div.	
IC301 PIN 24 STILL V LOCK 2V/div. 200μs/div.		IC301 PIN 67 REC/PB CFG OUT 200mV/div. 500μs/div.	
IC301 PIN 28 REC/PB C-SYNC 2V/div. 20μs/div.		IC301 PIN 74 REC CTL+ 1V/div. 20ms/div.	
IC301 PIN 33,34 REC/PB 2V/div. 5μs/div.			

WF-S-AF4H-Z

IC301 SYSTEM CONTROL & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	H/L	Signal Function
1	GND	-	-	Ground terminal
2	BIL CTL	O	H	Bilingual mode indicating signal output to decoder.
3	N.C.	-	-	-
4	N.C.	-	-	-
5	REMOCON IN	I	-	Remoto control signal input.
6	ML-D	O	-	Loading motor rocation indication signal. (Load "H", Brake "M", Unload "L")
7	ML-S	O	-	Loading motor rotation speed indication signal. (High "H", Middle "M", Low "L")
8	FLSTART + SAFETY	I	L	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
9	SW0	I	-	Data indicating operation position of mechanism. (L: Seaech, still, slow, stop, play and rec modes) (H: Eject, rew and initial modes)
10	POWER UP	O	H	High output excepu when power is off.
11	STREO IND	I	H	Streo mode indicating signal input from decoder.
12	BIL IND	I	H	Bilingual mode indicating signal input from decoder.
13	MTS CTL	O	-	Control signal to MTS decoder.
14	FLD SCLK	O	-	Clock pulse for FLD display drive IC,
15	FLD SDIN	I	-	Data signal input from FLD display drive IC,
16	FLD SDOT	O	-	Data signal output to FLD display drive IC,
17	I2C DAT	O	-	Control signal output to tuner, video-audio and HiFi audio IC.
18	I2C CLK	O	-	Clock signal output to tuner, video-audio and HiFi audio IC.
19	N.C.	-	-	-
20	MC F/R	O	-	Capstan motor roation (normal/reverse) indication signal. (reverse H)
21	N.C.	-	-	-
22	TU AD MUTE	O	H	Signal disable tuner audio signal output.
23	RF SW P	O	-	RF switching pulse created by head drum PG.
24	QVD	O	-	Quasi vertical synchronizing signal.
25	RESET	I	L	Initial reset terminal for this IC.
26	ANT(L)/VTR	O	-	Signal for selecting antena or VCR.
27	FLD CS	O	H	Chip select signal to FLD display drive IC.
28	C-SYNC	I	-	Composite synchronizing signal input.
29	CLK ADJ	-	-	-
30	PB-L	O	L	Signal for indicating playback mode.
31	N.C.	-	-	-
32	AF SW P	O	-	AF switching pulse created by head drum PG.
33	MC-PWM	O	-	Output of capstan motor servo control signal. (PWM signal)
34	MH-PWM	O	-	Output of head drum motor servo control signal. (PWM signal)
35	ORC PWM	O	-	Signal to control video signal recorde current. (PWM signal)
36	VDD	-	-	Back up 5V
37	OSCO	O	-	IC clock OSC terminal.
38	OSCI	I	-	14.318MHz
39	VSS	-	-	Ground terminal
40	XI	I	-	IC timer clock OSC terminal.
41	XO	O		32.768KHz
42	SXI	-	-	-
43	OSCI2	I	-	IC clock OSC terminal.
44	OSCO2	O	-	14.3282MHz
45	SHORT CHECK	I	-	Normaly H
46	ORC PBL	O	L	"L" during playback for adjusting rec-current during ORC mode.
47	VD OUT	O	-	Video output signal from on screen display circuit.
48	VSS2	-	-	Ground terminal.
49	VD IN	I		Video input signal to on screen display circuit.
50	VD IN	I		Video input signal to on screen display circuit.
51	VDD2	-	-	Always 5V
52	AFCC	-	-	-
53	AFCLPF	-	-	-
54	N.C.	-	-	-
55	N.C.	-	-	-
56	N.C.	-	-	-
57	N.C.	-	-	-
58	N.C.	-	-	-
59	N.C.	-	-	-
60	ORC VD MUTE	O	H	Signal disable video signal output during ORC mode.
61	N.C.	-	-	-
62	N.C.	-	-	-
63	N.C.	-	-	-
64	N.C.	-	-	-
65	DFG SIG IN	I	-	Head drum FG pulse input.
66	PG SIG IN	I	-	Head drum PG(phase) pulse input.
67	FG OUT	O	-	Head drum FG amp output.
68	CFG SIG IN	O	-	Capstan FG pulse input.
69	AMP BIAS	O	-	Bias voltage for DFG amp.
70	VRI	O	-	-
71	AVSS	-	-	Ground terminal.
72	CTLA	-	-	-
73	AVDD	O	-	Always 5V.
74	CTL+	I/O	-	Control pulse I/O.
75	CTL-	I/O	-	Control pulse I/O.
76	CO	-	-	-
77	ROM OP	-	-	-
78	AD MUTE	O	H	Signal disable audio signal output.
79	N.C.	-	-	-
80	POWER DOWN	I	L	Power failure detection circuit.
81	PG MM	-	-	Tirminal to adjust the timming bitween RF SW pulse and sync signal.
82	N.C.	-	-	-
83	AFT C	I	-	Tuner AFT S-curve signal for tuner AFT control.
84	AF ENV	I	-	HiFi audio head envelope detection signal input.
85	VD ENV	I	-	Video head envelope detection signal inputfor ATR function.
86	SW1+SW2	I	-	Data indicating operation position of mechanism. (2V: Eject, Rew and Initial modes) (2.5V: Still and Slow modes) (3.4V: Stop, Play, Rec and F-search modes) (5V: R-search mode)
87	REEL P	I	-	Pulse signal from take up reel moving sensor.
88	T TOP S	I	L	Sensor signal input for tape beginning detection.
89	T END S	I	L	Sensor signal input for tape end detection.
90	N.C.	-	-	-
91	N.C.	-	-	-
92	SXI	-	-	-
93	N.C.	-	-	-
94	N.C.	-	-	-
95	N.C.	-	-	-
96	N.C.	-	-	-
97	N.C.	-	-	-
98	ROTARY	O	-	Video head CH1/CH2 confirmation signal. Used in the processing of image circuit color signals.
99	H AMP SW	O	-	Main head and sub head switching signal.
100	ENV SW	I	-	Input comparation signal for main head and sub head.

AF4HZSY_IC301

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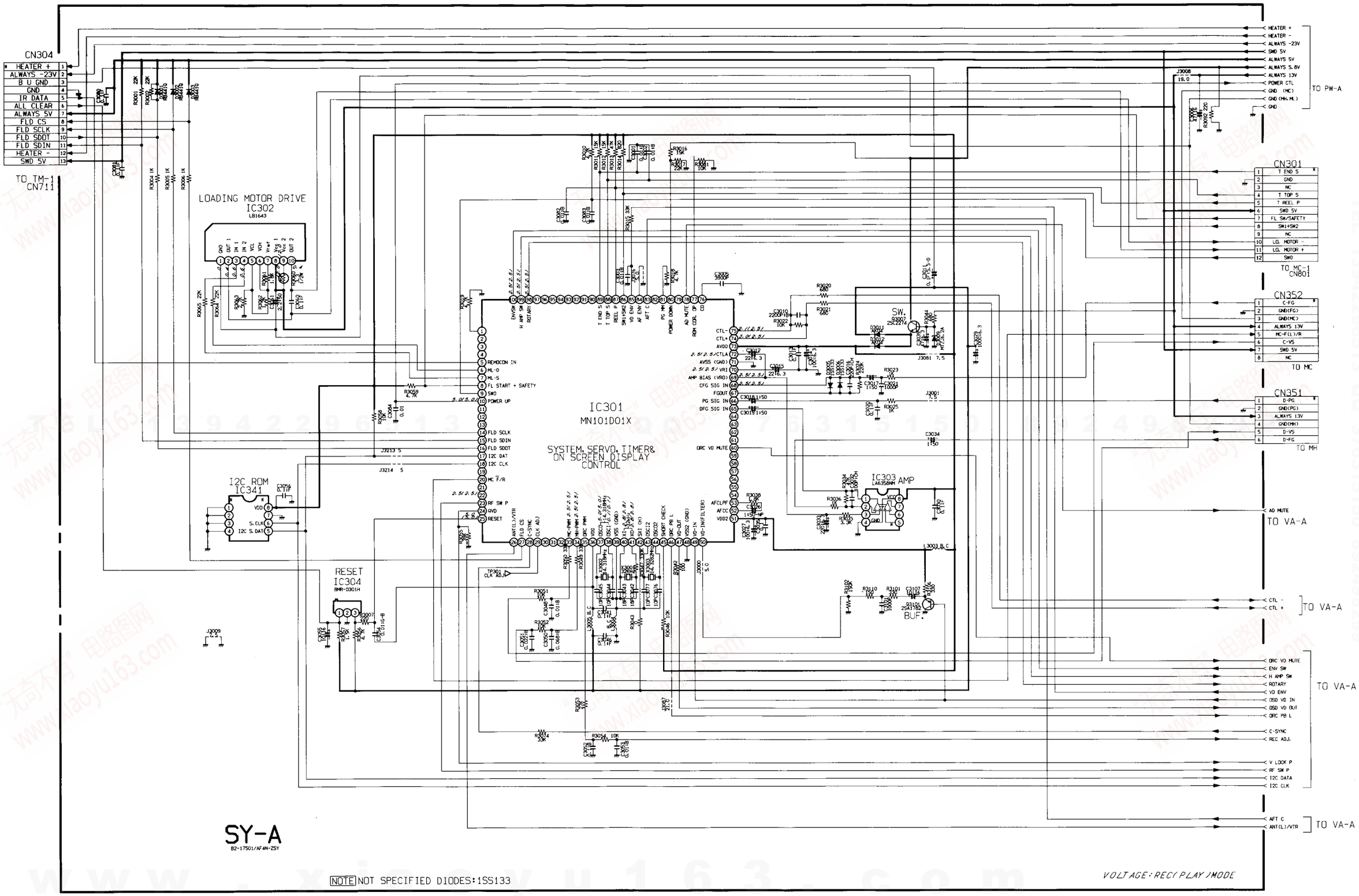
CP-1 BOARD (SY-A) SYSTEM CONTROL & SERVO CIRCUIT DIAGRAM (SLV-L45AR)



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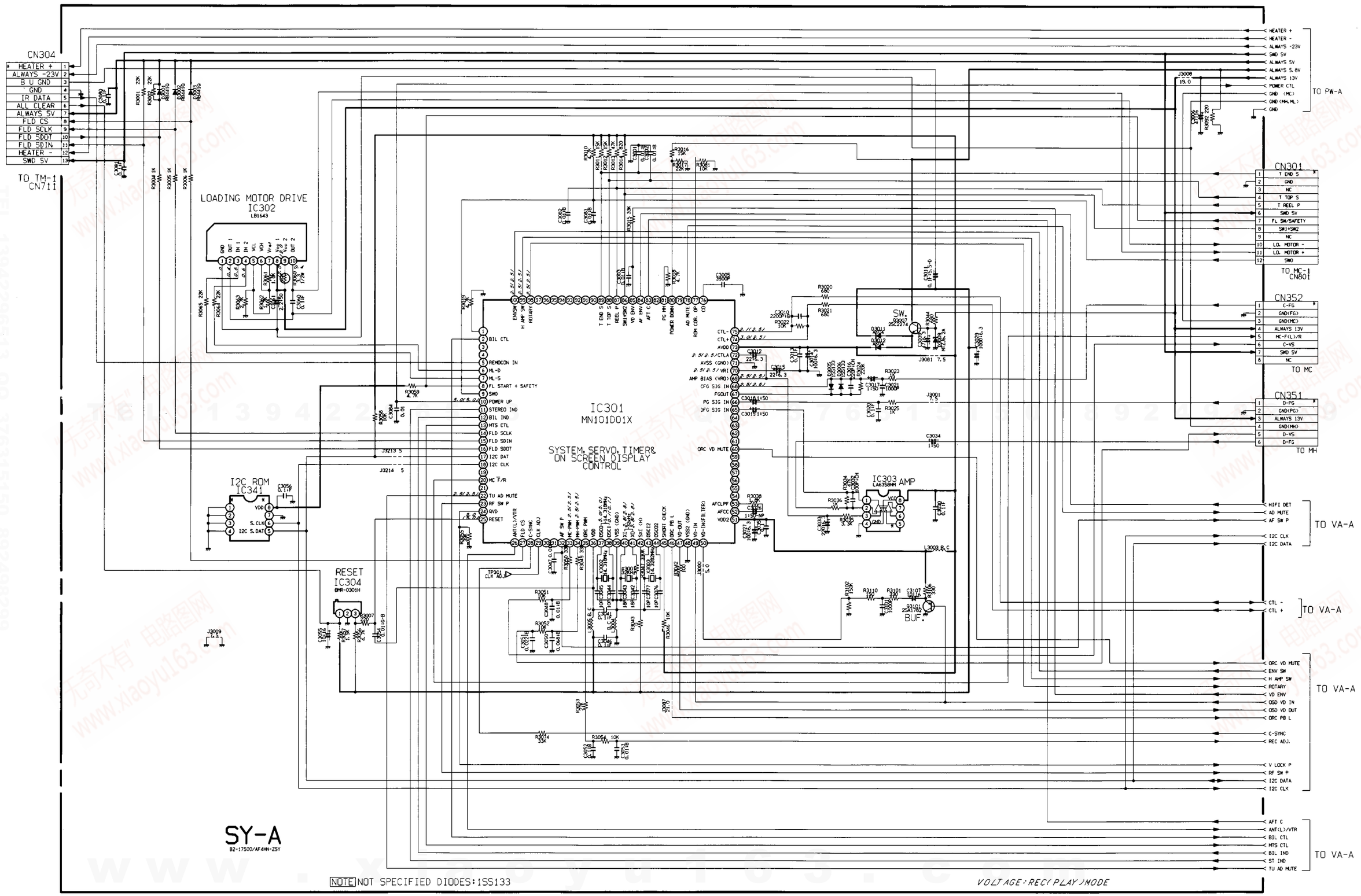
CP-1 BOARD (SY-A) SYSTEM CONTROL & SERVO CIRCUIT DIAGRAM (SLV-L65HFAR/L75HFAR)



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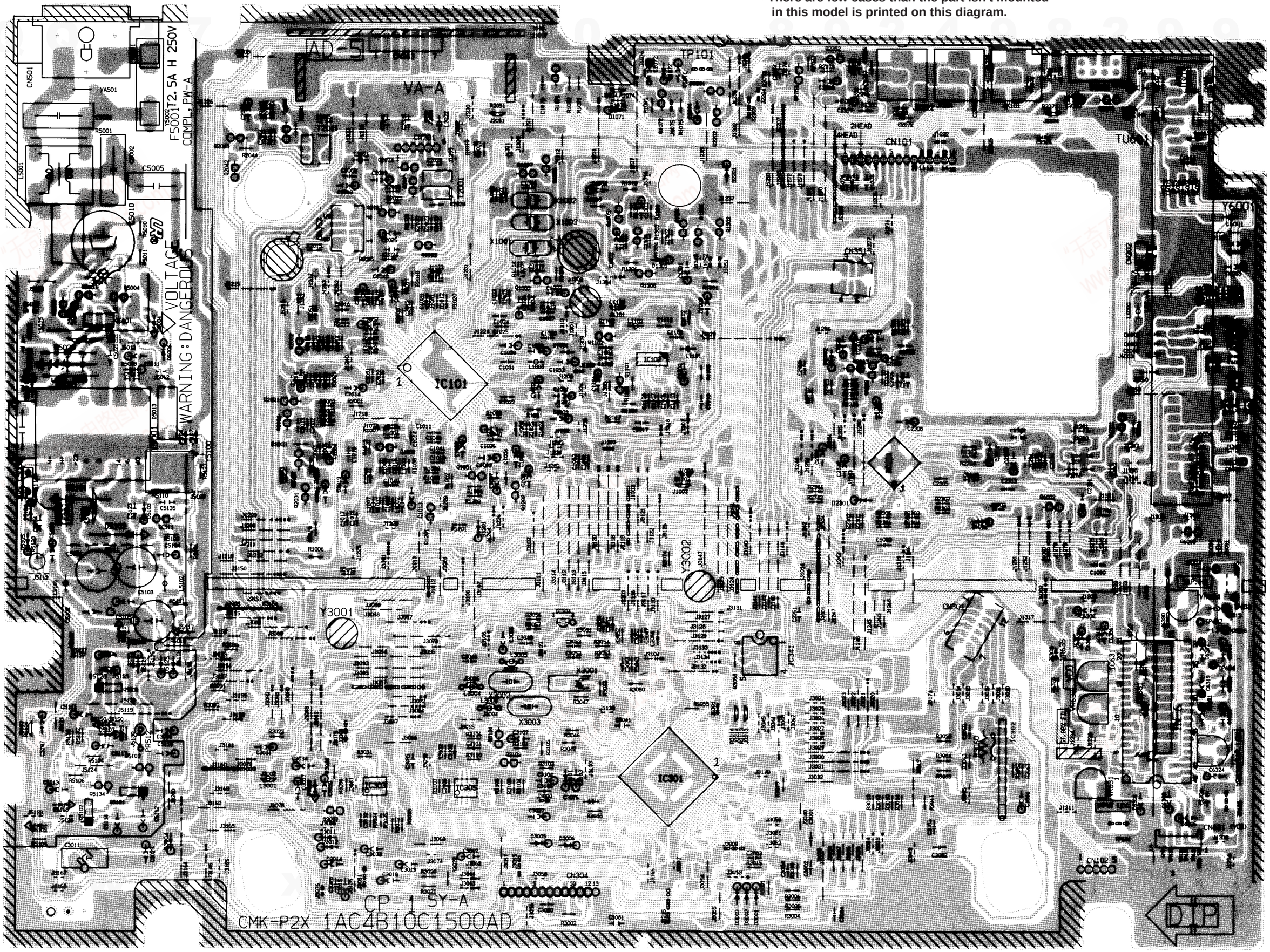
CP-1 P.W.B.

- There are few cases than the part isn't mounted in this model is printed on this diagram.



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SECTION 5
ADJUSTMENTS

1. MAINTAINING AND CHECKING THE MECHANISM

1-1. REGULAR CHECKS AND MAINTENANCE ITEMS

To obtain full function and maximum performance from the set, and to stop it getting dirty or scratched, we recommend that you carry out the following maintenance procedures and regular checks. The maintenance checks described in the following section should also be carried out without fail after carrying out any repairs to the set.

NOTE: OIL AND GREASE

- Always use the specified brands of oil and grease. If you use a grease with the wrong viscosity, for example, this can lead to all sorts of problems. Be careful to keep the oil and grease free of dust and foreign bodies.
- A “drop” of oil is the amount of oil remaining on the tip of a rod with a diameter of 1.5mm after it is dipped in oil to a depth of 1cm and then taken out.

1-1-1. REGULAR CHECKS

○ Clean ◎ Check △ Oil

Part maintained \ Hours of use (H)		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Remarks
Tape path system	Tape guide	○	○	○	○	○	○	○	○	○	○	
	ACE head, full erase head	○	○	○	○	○	○	○	○	○	○	
	Cylinder (drum)	○	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	The life of parts varies enormously, depending on the environment in which the part is used.
	Cleaner roller assembly		◎		◎		◎		◎		◎	
	Pinch roller	○	○	○	○	○	○	○	○	○	○	
Drive system	Reel table		○		○△		○		○△		○	
	Reel belt	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Relay gear, Pulley shaft, Gear shaft		△		△		△		△		△	
	Loading motor		◎		◎		◎		◎		◎	
Perform-ance checks	Back tension		◎		◎		◎		◎		◎	Playback tension torque: 30 to 50g/cm
	Brake system		◎		◎		◎		◎		◎	
	FWD, REW, PLAY torque, REV torque		◎		◎		◎		◎		◎	FWD: 600g/cm or over REW: 600g/cm or over PLAY (SP mode): 80 to I 40g/cm REV: 120 to 220g/cm

1-1-2. CLEANING

1. Cylinder (Drum) (See Fig.1-1-1)

Moisten a chamois with methyl alcohol and clean the video head (including the Hi-Fi audio head) and the tape path surface of the cylinder. Be sure to wipe horizontally in relation to the video head. If you wipe vertically, or use excessive force, you can damage the video head.

2. Tape Path System / Reel Drive System

Clean the pinch roller, the capstan shaft, the tape guides, the FE head, the ACE head, the reel table, the pulley and the reel belt with a soft cloth, or chamois, moistened with methyl alcohol.

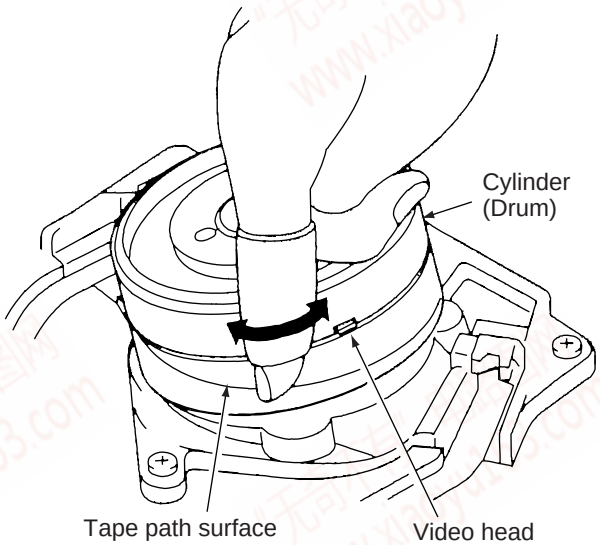

Fig.1-1-1

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1-2. SERVICE TOOLS

1-2-1. SERVICE TOOLS

NOTES ON ALIGNMENT TAPES

Select a PAL or NTSC alignment tape from the list below, according to the transmission system of the VCR you are repairing.
PAL: For models with 625 scanning lines and a field frequency of 50Hz
NTSC: For models with 525 scanning lines and a field frequency of 60Hz

No.	Tool	Tool No.	Remarks
1	Alignment tape NTSC (KRV51N2)	8-192-605-32	NTSC-NORMAL
2	Alignment tape PAL (KRV-51P)	8-192-605-36	PAL-NORMAL
3	Alignment tape NTSC (KRV-52NE)	8-192-605-41	Used to adjust the tape path
4	Alignment tape PAL (KRV-52PL)	8-192-605-46	Used to adjust the tape path
5	Eccentric screw driver	J-6082-044-A	Used to adjust the tape path
6	Nut box	J-6082-045-A	Used to adjust the height of the lever load assembly
7	Torque dial gauge	H-7099-039-H	Used to measure reel winding torque
8	Torque dial gauge adaptor	H-7099-035-H	Used to measure reel winding torque
9	Cassette torque meter(VHJ-063S)	J-6082-011-A	Used to measure back tension torque
10	Load lever assembly height adjustment tool	J-6090-055-A	Used to adjust the height of the load lever assembly
11	Torque gauge screwdriver	J-6082-047-A	Used to adjust the tightening torque of screws
12	3 mm dia. bit for torque screwdriver	J-6082-048-A	Used to replace the bit of the torque gauge screwdriver
13	Oil	7-661-018-18	
14	Grease	7-662-010-04	
15	Grease	J-6090-014-A	
16	Relay cables	J-6090-057-A	Relay cables of mechanism and CP-1 PWB assembly

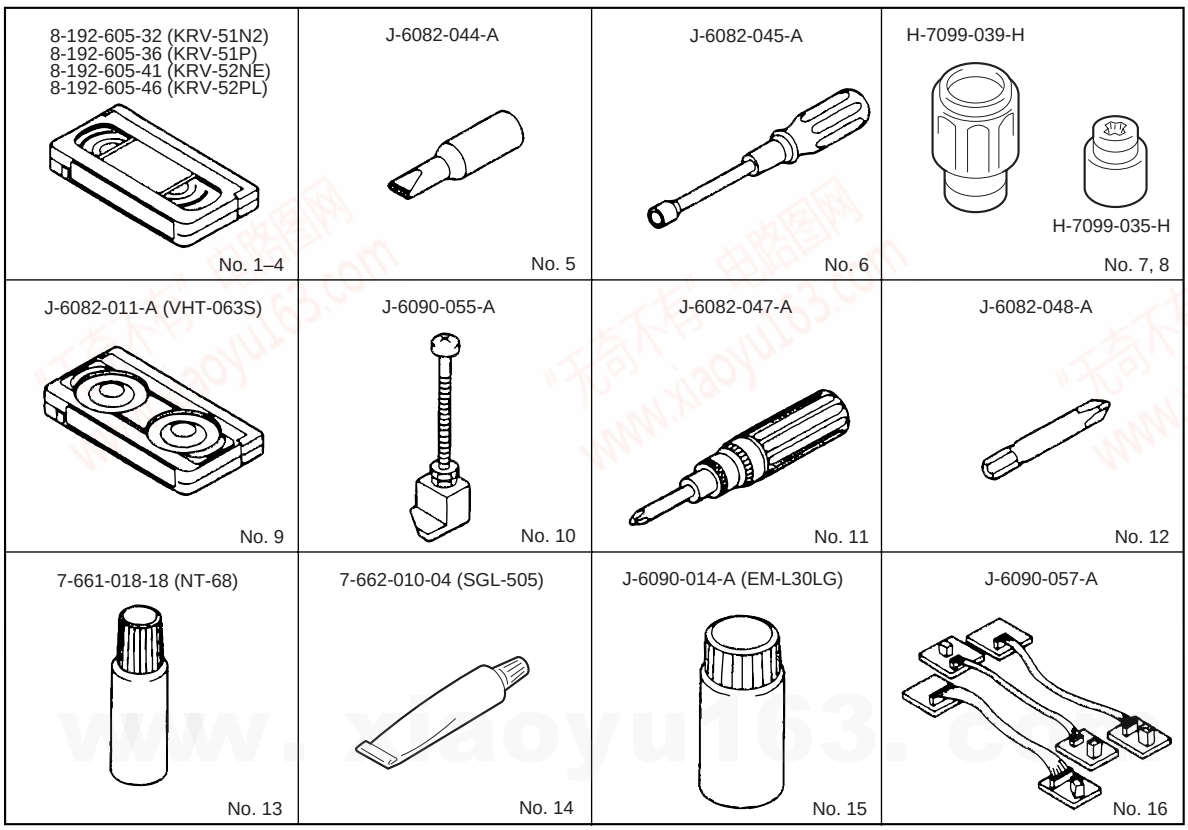

Fig.1-2-1

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1-2-2. Using the Relay Cable (J-6090-057-A)

The mechanism can be repaired without using the relay cable (J-6090-057-A). As shown in Fig. 1-3-1, the relay cable (J-6090-057-A) is a tool used for relay between the CP-1 PWB assembly and mechanism unit.
When connecting it, take note of the pin number of the connector.

NOTE 1: Do not place the mechanism upright as shown in Fig. 1-3-1 when inserting/ejecting the cassette.
NOTE 2: For NTSC models, be sure to connect the VM-1 PWB assembly and CP-1 PWB assembly.

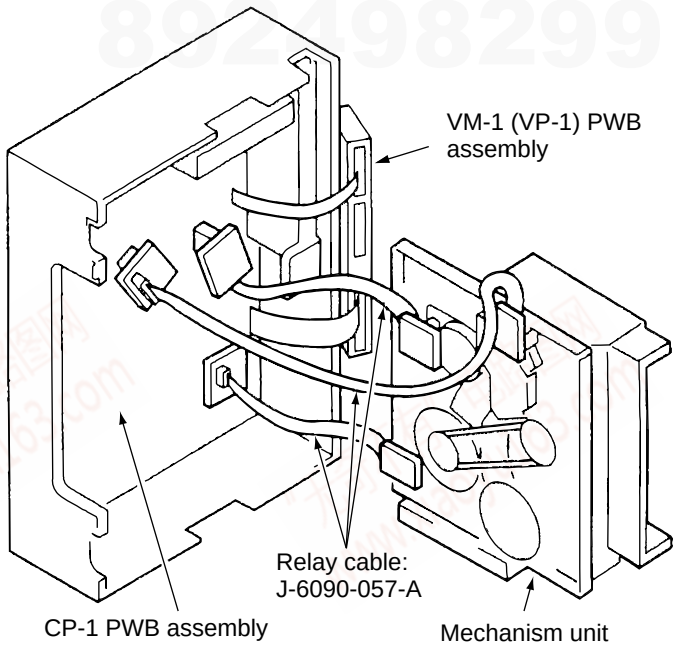

Fig. 1-2-2

2. AN OVERVIEW OF THE MECHANISM

2-1. NAMES OF THE MAIN PARTS

2-1-1. CASSETTE MECHANISM ASSEMBLY

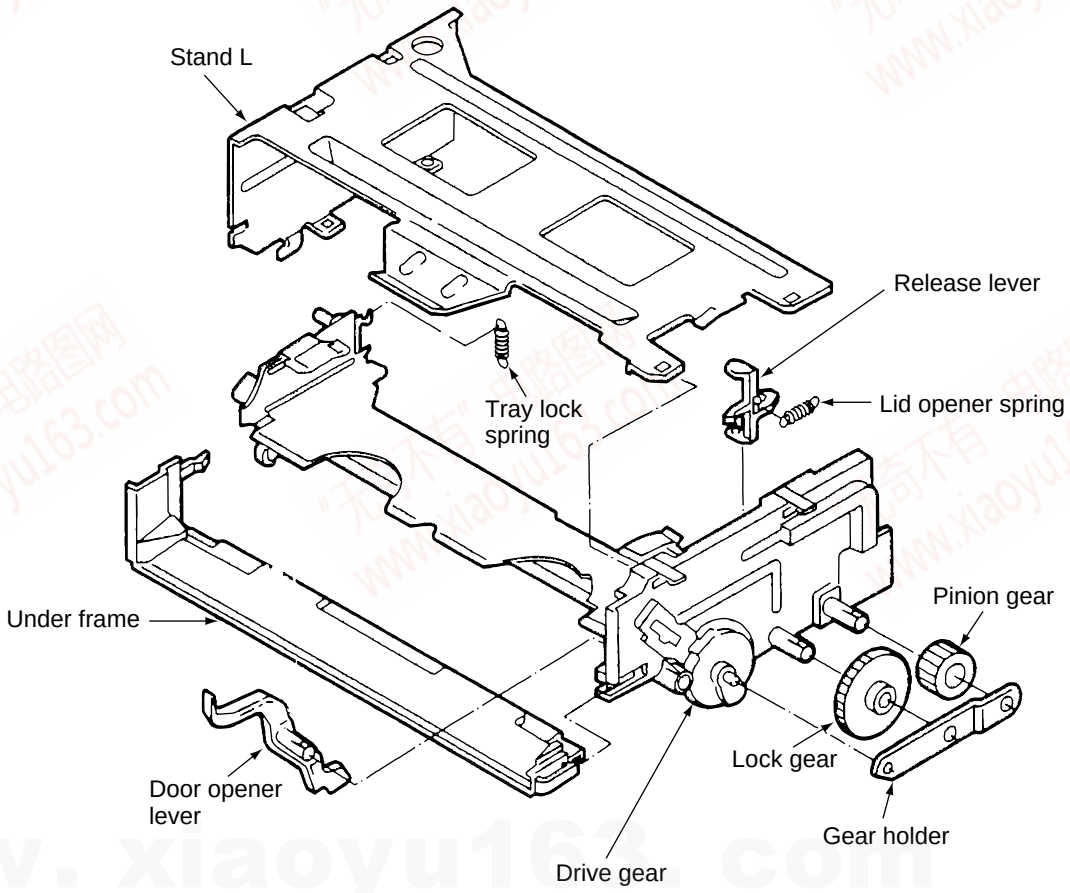

Fig. 2-1-1

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2-1-2. TOP VIEW

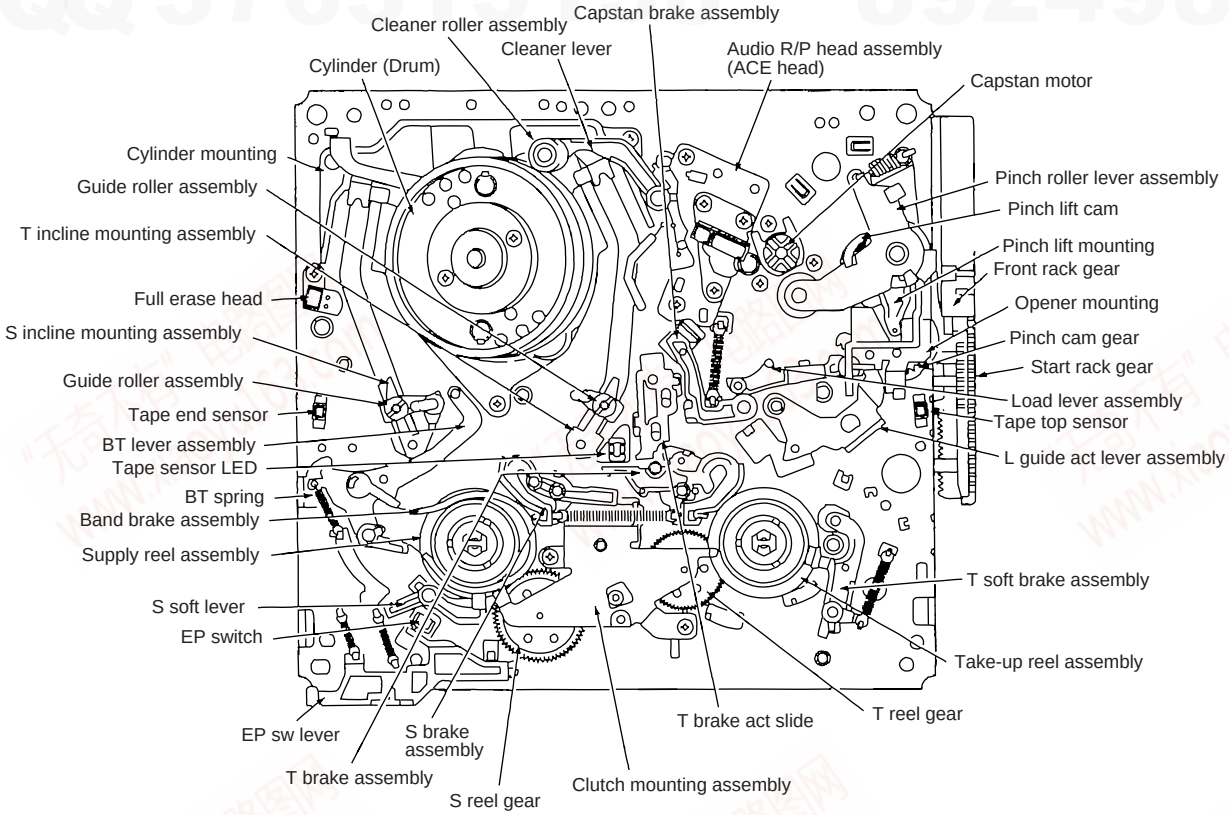

Fig. 2-1-2

2-1-3. UNDER SIDE

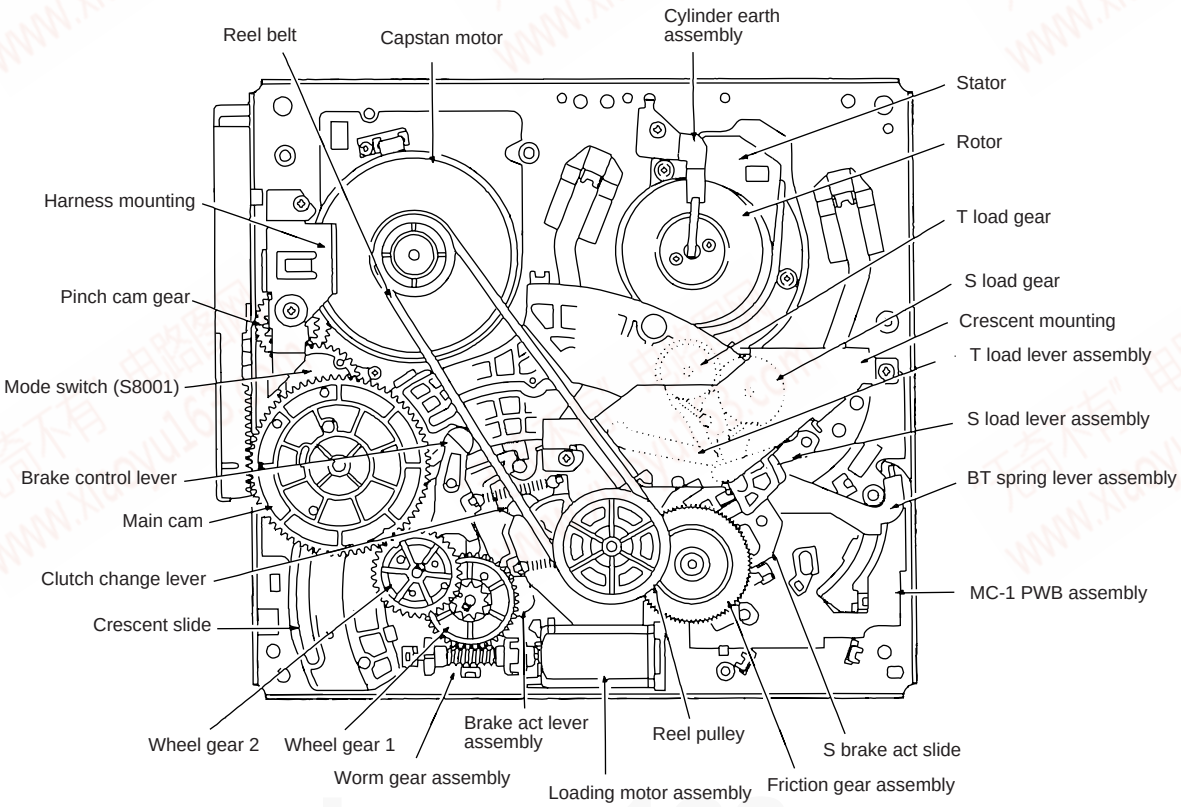

Fig. 2-1-3

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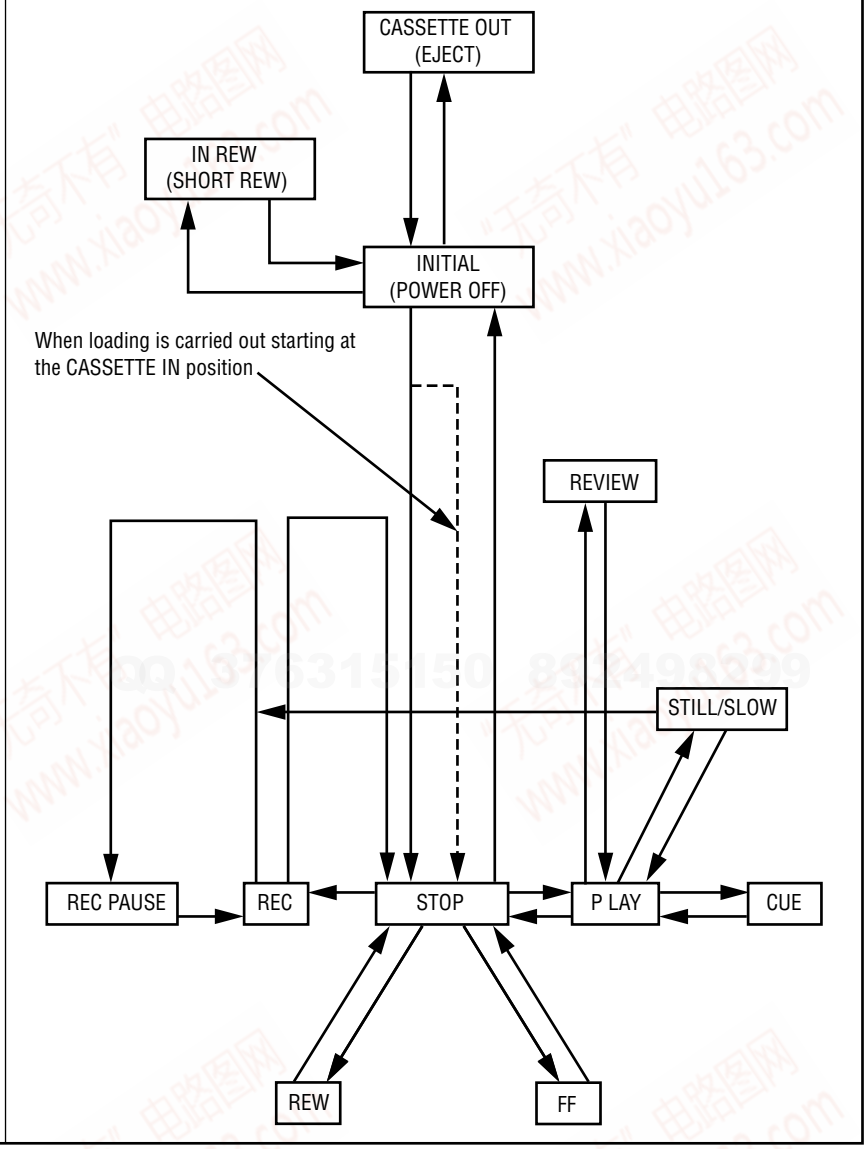
2-2. AN OVERVIEW OF THE MECHANISM MODES

2-2-1 . MECHANISM MODE SWITCHING TABLE

NOTE: The letters and figures enclosed in circles in the mechanism mode column are the codes on the crescent slide.

HEX DATA	Mechanism mode	The principal mode-switching states of the mechanism
6	EJECT Ⓔ Distinguished by whether the EP switch is ON or OFF. Horizontal shift section. Vertical shift section.	
2		
0	IN REW Ⓡ	
7	INITIAL ⑦	
0	Cleaner roller assembly: ON S/T mounting incline assembly pressure begins.	
1		
0	S/T mounting incline assembly pressure ends.	
1	REVIEW ①	
0		
2	IDLER pos. ② (Pinch roller OFF)	
0		
3	STILL/SLOW ③	
0		
5	PLAY/STOP ⑤	
0		
4	BRAKE pos. ④	
0		
6	FF/REW ⑥	



MODE SWITCH OUTPUT TABLE

HEX DATA	SW DATA 1	SW DATA X	SW DATA Y	SW DATA 2 Z	SW DATA 2
0	5.0V	H	H	H	5V
1	5.0V	H	H	L	0V
2	2.5V	H	L	H	5V
3	2.5V	H	L	L	0V
4	3.4V	L	H	H	5V
5	3.4V	L	H	L	0V
6	2.0V	L	L	H	5V
7	2.0V	L	L	L	0V

APPEARANCE OF MODE SWITCH AND RELATIONSHIP BETWEEN MODE POSITIONS

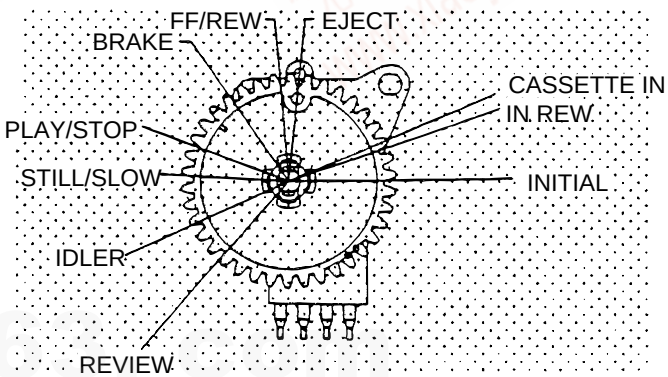


Fig. 2-2-1

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2-2-2. MOVEMENT CHECK LIST FOR THE MAIN PARTS OF THE MECHANISM

(S): Strength (W): Weakness

Mechanism mode / Principal parts	EJECT	IN REW	INITIAL (POWER OFF)	(LOADING)	(UNLOADING)	REV	IDLER	STILL/SLOW	PLAY/STOP	BRAKE	FF/REW	
T brake assembly	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON/OFF	
S brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON/OFF	
T soft brake assembly	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
S soft lever	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
BT lever assembly	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
BT spring	OFF	OFF	OFF	OFF	OFF	ON(W)	ON(W)	ON(S)	ON(S)	ON(S)	ON(W)	
Pinch roller lever assembly	UP	UP	UP	UP/ DOWN	DOWN/ UP	ON	OFF	ON	ON	OFF	OFF	
Clutch mounting assembly	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	FF	
Load lever assembly	UNLO	UNLO	UNLO	LO	LO	LO	LO	LO	L	LO	LO	
Capstan brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	
S and T incline mounting assembly				LO	UNLO							
Cleaner roller assembly	OFF	OFF	OFF	(ON)	(ON)	OFF	OFF	OFF	OFF	OFF	OFF	

2-2-3. HOW TO CHECK THE MECHANISM MODE POSITION

You can tell which mode the mechanism is currently in by looking at the codes and marking-lines on the crescent slide on the underside of the mechanism chassis. The edge of the crescent mounting is used as the reference line, as shown in Fig.2-2-2, and the marking-lines and symbols indicating the mechanism modes are displayed on the crescent slide, which slides against the edge of the crescent mounting. The mechanism mode is read off from the marking-line on the slide crescent which is aligned with the reference-line on the crescent mounting.
Example: In Fig.2-2-2, marking-line 6 is aligned with the reference-line on the crescent mounting , so the mechanism is seen to be in FF/REW mode.

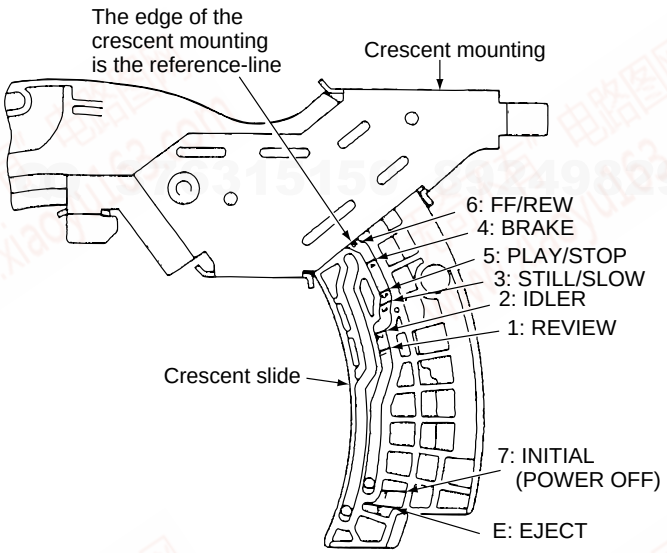

Fig. 2-2-2

2-2-4. SELF-DIAGNOSIS DISPLAY

Some models are equipped with the SELF-DIAGNOSIS DISPLAYS function.
Use it as a means of finding out the symptoms and cause of the error before performing repairs.
For details, refer to the separate service manual for the respective models.

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3. DISASSEMBLING THE MAIN PARTS OF THE MECHANISM

POINTS TO NOTE

- When fitting the parts of the mechanism, refer to the ''Assembly Notes'', and proceed in the reverse of dis-assembly order.
- Dis-assembly and assembly should be carried out in EJECT mode unless a movement mode is explicitly specified. EJECT mode is the state in which the cassette tape has been ejected.
- Clamps are used to prevent parts coming loose. When removing a clamp, be careful not to force it, as this can result in damage.

3-1. HOW TO MAKE THE MECHANISM MOVE

In order to check a movement such as front loading, front unloading, tape loading, tape unloading, raising/lowering and pressing the pinch roller, you will need to operate the loading motor. There are two methods of operating the loading motor, and these are explained in sections 3-1-1 and 3-1-2. The above movements can also be performed without operating the loading motor, by following the method explained in section 3-1-3.

3-1-1. HOW TO OPERATE THE LOADING MOTOR USING A DC VOLTAGE SUPPLY (See Fig.3-1-1)

1) Remove the power plug from the socket.
2) Remove the top cover, front cabinet assembly and bottom cover.
3) Supply a DC voltage in the range 5V between the MOTOR (+) wire and the MOTOR (–) wire on the CP-1 PWB assembly. To make the loading motor rotate in the PLAY or FF/REW direction, the positive terminal should be connected to the MOTOR (+) wire, and the negative terminal to the MOTOR (–) wire. To make it rotate in the EJECT direction, connect the positive terminal to the MOTOR (–) wire, and the negative terminal to the MOTOR (+) wire.
   When rotating the loading motor in the E JECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.

NOTE 1: When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig. 3-2-2) in the direction of the arrow.

NOTE 2: When the loading motor stops rotating, following the completion of an operation such as tape loading or front unloading, switch off the DC voltage supply.

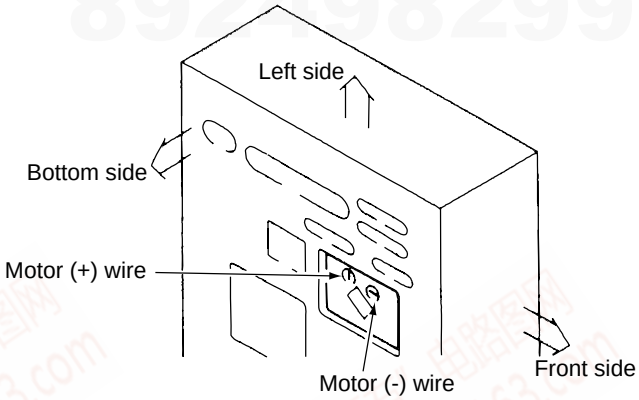

Fig. 3-1-1

3-1-2. OPERATING THE LOADING MOTOR BY THE MANUAL METHOD (See Fig. 3-1-2)

1) Refer to section 3-2 and install the mechanism unit.
2) Using your finger, turn the loading motor located at the rear of the mechanism unit. For EJECT, turn the loading motor in the direction of the arrow on the loading motor. For PLAY or FF/REW, turn it in the opposite direction. When rotating the loading motor in the EJECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.
   When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig. 3-2-2).

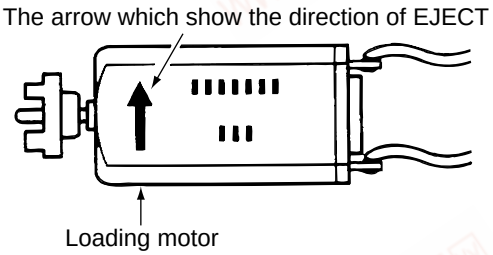

Fig. 3-1-2

3-1-3. MAKING THE MECHANISM MOVE USING THE MANUAL METHOD

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the gear wheel 2.
3) If you turn the main cam anticlockwise, the mechanism will switch to a mode such as PLAY or FF/REW. To switch from FF/REW mode to EJECT mode, turn the main cam clockwise.

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3-2. MECHANISM UNIT (See Figs. 3-2-1 and 3-2-2)

1) Remove the top cover, bottom cover and front cabinet assembly.
2) Unplug the flat cable ① from the VM-1/VP-1 PWB assembly on the cylinder (drum), and unplug the ACE head connector ③.
3) Remove the screw ②, the two screws ④, then remove the VM-1/VP-1 PWB assembly ⑤, lifting it upwards. The shape of the VM-1/VP-1 PWB assembly and the bracket varies according to the model.
4) Remove the four screws ⑥ and the two screws ⑩, then lift up the mechanism unit. The tray ⑦ will stop you removing the two screws ⑥ on the front, so release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ shown in Fig. 3-2-2, then slide off the tray ⑦. Move the tray by referring to section 3-1 and turn the loading motor in the PLAY direction.

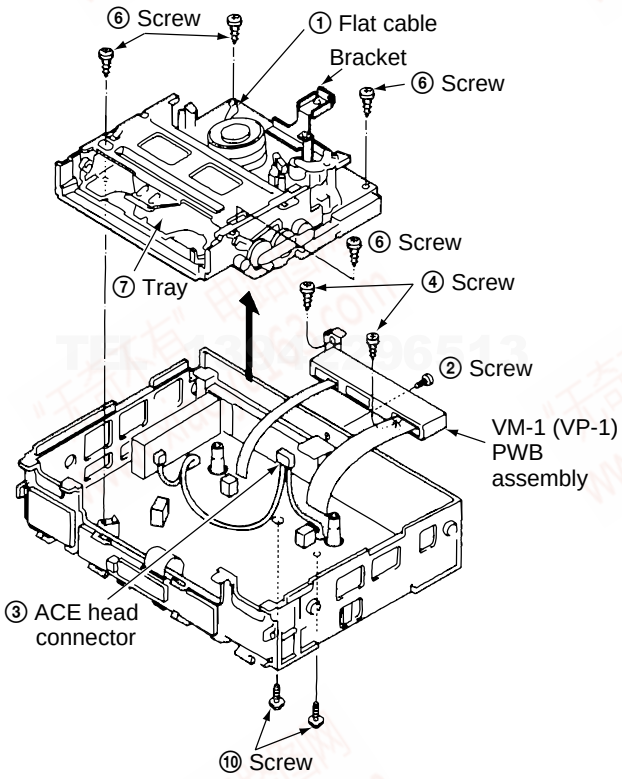

Fig.3-2-1

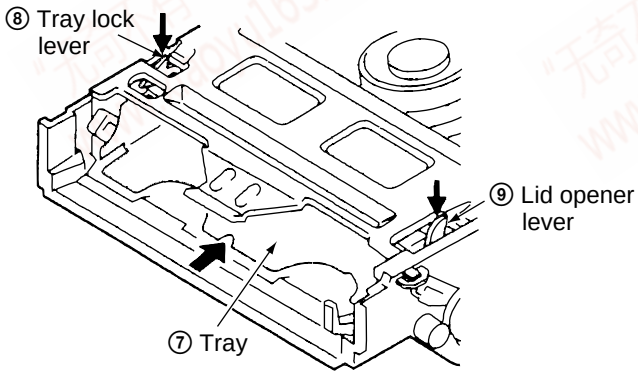

Fig.3-2-2

3-3.CASSETTE DRIVE MECHANISM

3-3-1 . CASSETTE MECHANISM ASSEMBLY (See Figs.3-3-1 and 3-3-2)

1) Put the VCR into EJECT mode.
2) Remove the two screws ①.
3) Lift up the back of the cassette mechanism assembly ② slightly, and remove the two hooks ③ on the front.

ASSEMBLY NOTES:

1. The cassette mechanism assembly and the mechanism chassis should both be fitted in EJECT mode.
2. Check that the two hooks ③ have snapped into the mechanism chassis, and make sure that the two holes ④ in the cassette mechanism assembly are aligned with the two dowels ⑤ on the mechanism chassis.
3. Make sure that the big tooth on the pinion gear of the cassette mechanism assembly slots properly into the deepest gap in the start rack gear, as shown in Fig. 3-3-2.
4. When fitting the two screws ①, use the torque gauge screwdriver (J-6082-047-A). Give the screws a tightening torque of 5 kg/cm.

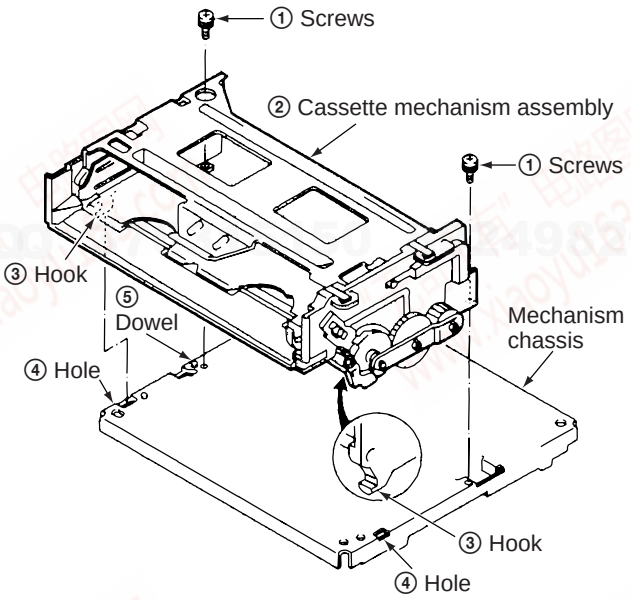

Fig.3-3-1

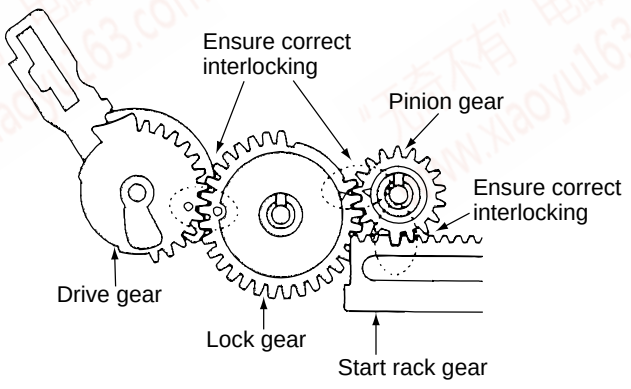

Fig. 3-3-2

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3-3-2. CASSETTE DRIVE GEAR (See Fig. 3-3-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove clamps ① and ②, then remove the gear holder ③.
3) Remove the clamp ①, then remove the pinion gear ④.
4) Remove the clamp ②, then remove the lockgear ⑤.

ASSEMBLY NOTES:

1. Put the tray in the EJECT mode position before fitting any parts.
2. Apply grease (SGL-505) to the gear mounting shafts, all the gear teeth, and the cam part of the drive gear ⑥.
3. Ensure that the drive gear, the lock gear and the pinion gear interlock correctly, as shown in Fig. 3-3-2.
4. Make sure the clamps ① and ② snap in to the gear holder ③.

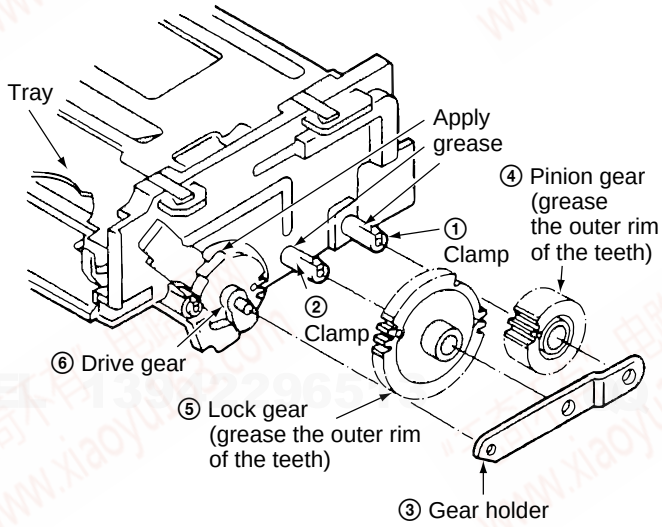
Tray
Apply grease
④ Pinion gear (grease the outer rim of the teeth)
① Clamp
② Clamp
⑥ Drive gear
⑤ Lock gear (grease the outer rim of the teeth)
③ Gear holder

Fig.3-3-3

3-3-3. DOOR OPENER, UNDER FRAME AND STAND L (See Fig. 3-3-4)

1) Remove the cassette mechanism assembly, referring to section 3-1.
2) Remove the two clamps ① and take out the under frame ②, pulling it towards you.
3) Press down the tray lock lever ③ and the lid opener lever ④, and loosen the tray ⑤, lifting it away from you. In this state, press the clamp ⑥ and remove the door opener lever ⑦.
4) Remove the two clamps ⑧ and take out the stand L ⑨. Be careful not to exert too much force on the clamps ⑧, as this could cause damage.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the grooves ⑪ on the stand L, the inside of the hole ⑬ in the drive shaft ⑫. and the mounting hole ⑭ in the door opener lever of the stand R.
2. Before fitting the stand L ⑨, be sure to move the tray ⑤ back as far as the EJECT mode position. Put the two pins ⑩ on the tray ⑤ into the grooves ⑪ on the stand L. Put the drive shaft ⑫ into the hole ⑬.
3. Be suretofasten the two clamps ① and theclamp ⑥ on the stand R, and to fasten the two clamps ⑧ on the stand L.

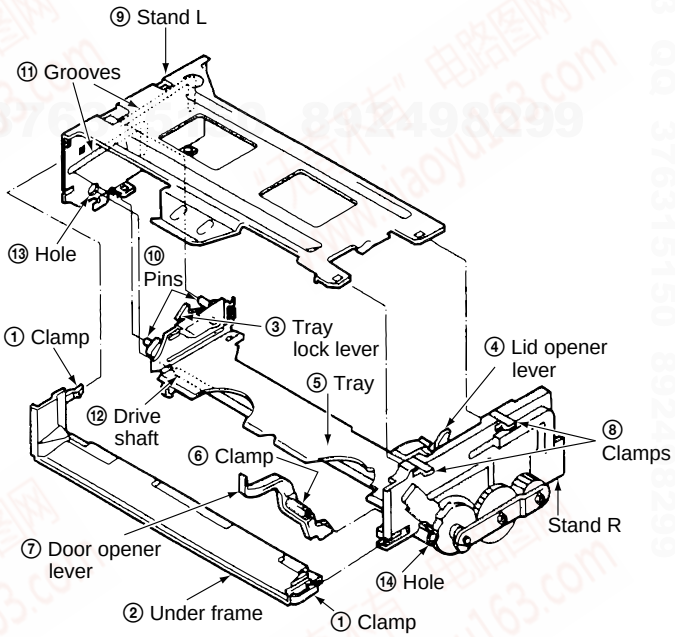

Fig.3-3-4

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3-3-4. START RACK GEAR AND FRONT RACK GEAR (See Figs. 3-3-5 and 3-3-6)

1) Remove the mechanism unit, referring to section 3-2.
2) Remove the cassette mechanism assembly, referring to section 3-3-1.
3) Remove the special screw ①. When you dothis, slide the front rack gear assembly ② towards the front until it stops, then take it off the shaft ③. Take care not to damage the shaft ③.
4) Remove the spring ④.
5) Remove the clamp ⑥ on the front rack gear ⑤, then remove the start rack gear ⑦.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the front rack gear ⑤ and all over the inside of the groove on the start rack gear ⑦.
2. Align the positioning mark ⑧ on the front rack gear ⑤ with the mark ⑩ on the main cam ⑨.
3. When installing the cassette mechanism assembly, refer to section 3-3-1 and align the start rack gear with the pinion gear.

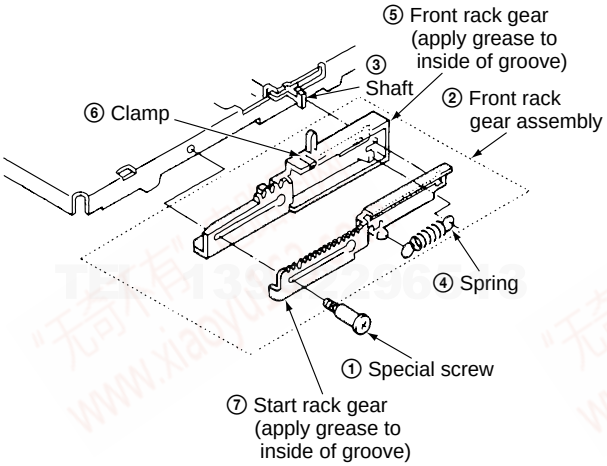
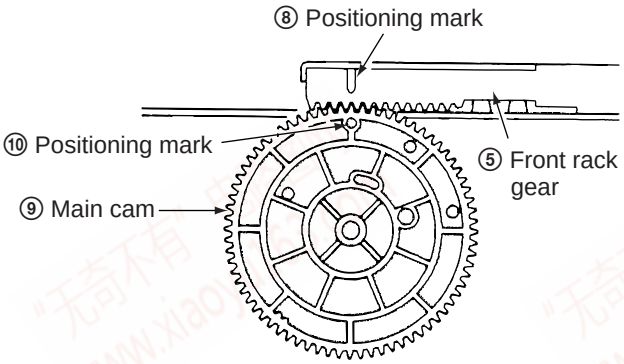

⑤ Front rack gear (apply grease to inside of groove)
③ Shaft
⑥ Clamp
② Front rack gear assembly
④ Spring
① Special screw
⑦ Start rack gear (apply grease to inside of groove)

Fig.3-3-5



Flg.3-3-6

3-4. CLEANER ROLLER ASSEMBLY (See Fig. 3-4-1)

1) Remove the clamp ① and take out the cleaner lever ②. When you do this, be careful not to bend the plastic springs Ⓐ and Ⓑ on the cleaner lever ②.
2) Remove the clamp ③, and take out the cleaner roller assembly ④. Be careful not to touch the sponge on the cleaner roller assembly ④.

ASSEMBLY NOTES:

1. When mounting the cleaner lever ② on the shaft ⑤, press the clamp ① in the direction shown by the arrow, and snap it into the mounting ⑥ on the audio R/P head assembly.

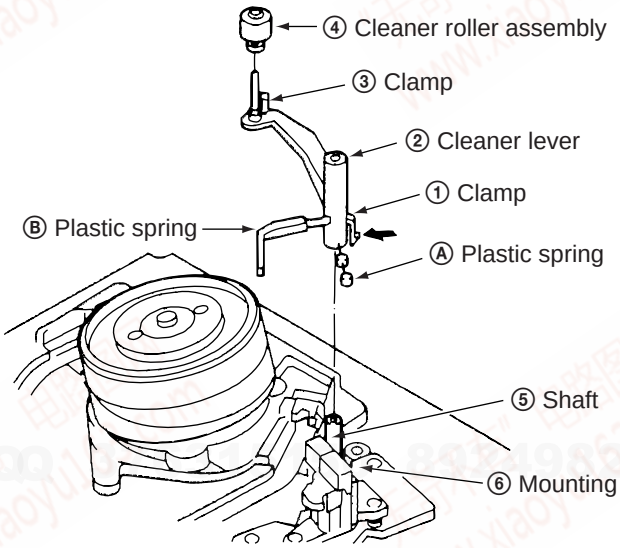


Fig.3-4-1

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3-5. CYLINDER (DRUM)

3-5-1. CYLINDER MOTOR (ROTOR AND STATOR) (See Fig. 3-5-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the screw ① and remove the cylindere arth assembly ② .
3) Remove the two screws ③, the rotor ④ and the spacer ⑧ .
4) Remove the three screws ⑤ and the stator ⑥.

ASSEMBLY NOTES:

1. When fitting the rotor ④, align the long hole ⑨ -beside the triangular mark on the rotor ④ - with the hole ⑩ in the rotor disk.
2. When fitting the screws ③ and ⑤, use the torque gauge screwdriver (J-6082-047-A). Give the screws a tightening torque of 3 kg/cm.
3. Align the dowels ⑪ on the cylinder earth assembly ② with the holes ⑫ in the chassis.
4. After fitting the mechanism unit, do the switching position adjustment of the servo circuit.

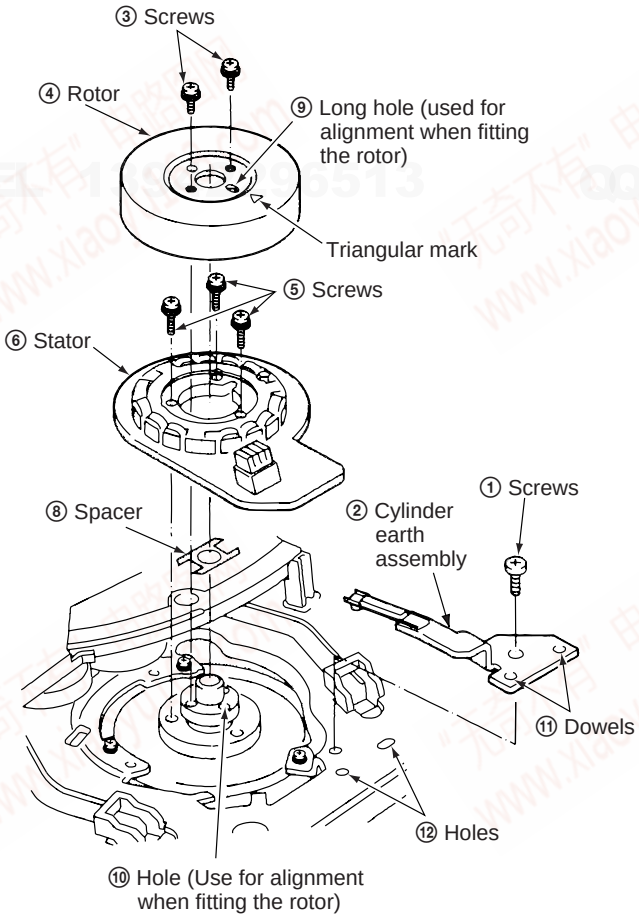

Fig. 3-5-1

3-5-2. CYLINDER ASSEMBLY (See Fig. 3-5-2)

1) Refer to sections 3-5-2, and remove the cylinder unit, the rotor, and the stator.
2) Remove the three screws ① and the cylinder assembly ②.

ASSEMBLY NOTES:

1.Be careful not to scratch or soil the top of the cylinder. After fitting the cyiinder, clean the surface.
2.Align the cylinder assembly ② with the two dowels ④ on the mechanism chassis ③.
3.After fitting the cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the switching position adjustment of the servo circuit.

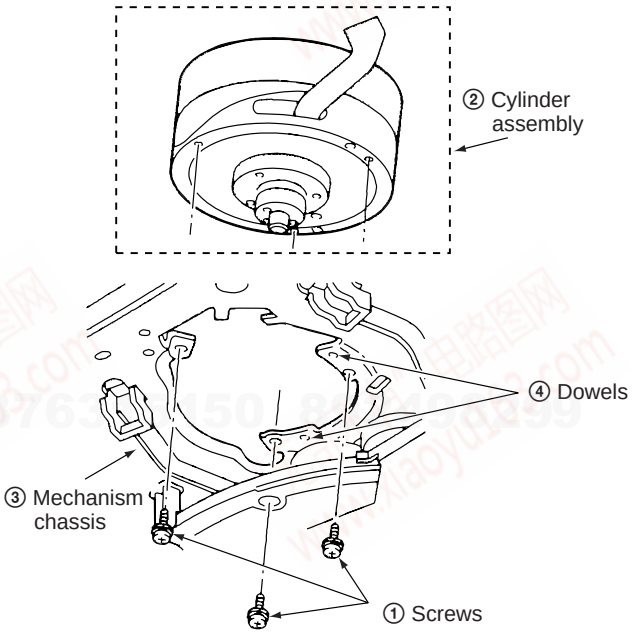

Fig.3-5-2

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3-6. FE HEAD AND ACE HEAD

3-6-1. AUDIO R/P HEAD ASSEMBLY (ACE HEAD) (See Fig. 3-6-1)

1) Unplug the connector from the audio R/P head assembly (ACE head).
2) Remove the two screws ① and the audio R/P head assembly (ACE head) ②.

ASSEMBLY NOTES:

1. Align the hole ③ on the audio R/P head assembly (ACE head) with the pin ④ on the chassis unit.
2. After assembly, check that the clamp ⑤ on the cleaner roller assembly has snapped into the mounting of the audio R/P head assembly (ACE head) ②.
3. After assembly, clean the surface of the head with a soft cloth or chamois.
4. After assembly, refer to section 4-3, and adjust the head height, the azimuth and the tracking (X) position.

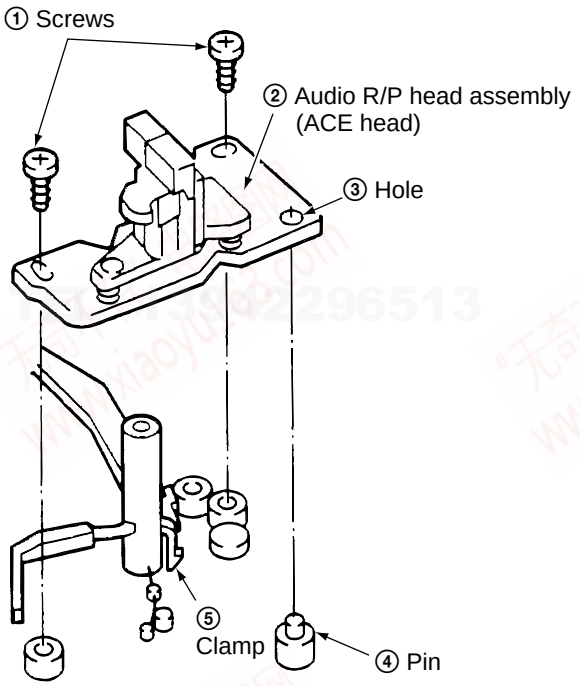

Fig. 3-6-1

3-6-2. FULL ERASE HEAD (See Fig.3-6-2)

1) Unplug the connector from the full erase head ①.
2) Remove the screw ② and the full erase head ①.

ASSEMBLY NOTE:

1. After assembly, clean the full erase head ①.

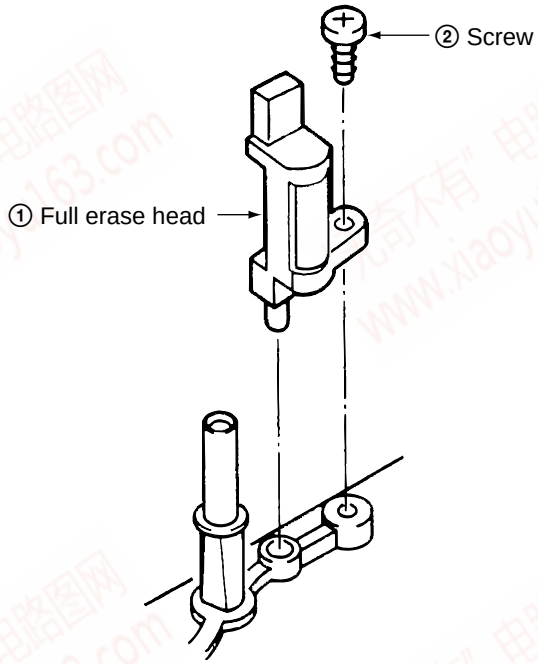

Fig. 3-6-2

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3-7.CAPSTAN MOTOR

3-7-1. CAPSTAN MOTOR (See Fig.3-7-1)

1) Refer to section 3-2. then remove the mechanism unit.
2) Remove the two screws ②, then remove the harness mounting ①.
3) Remove the reel belt ③.
4) Remove the three screws ⑤ and the capstan motor ⑥.

ASSEMBLY NOTES:

1. Check that connector ④ is inserted in the CP-1 PWB assembly.
2. When fitting the thre screws ⑤, use the torque gauge screwdriver (J-6082-047-A). Give the screws a tightening torque of 3.5 kg/cm.
3. After assembly, clean the capstan shaft with a soft cloth or chamois.

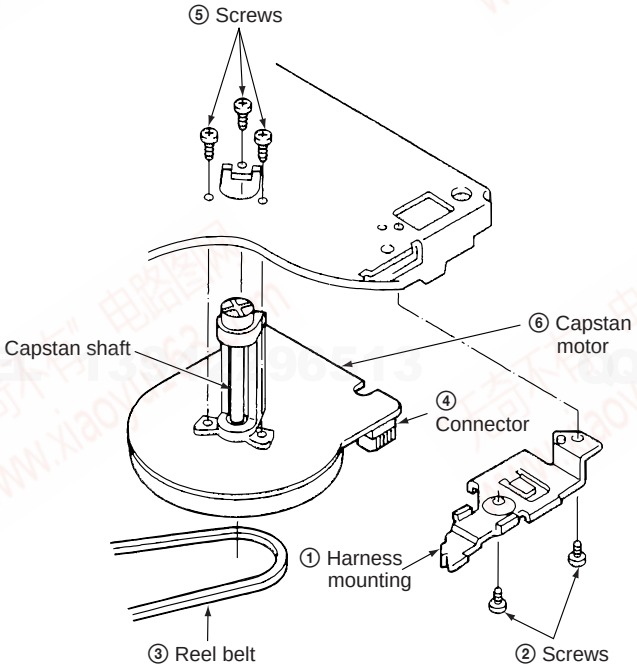

Fig. 3-7-1

3-7-2. CAPSTAN BRAKE ASSEMBLY (See Fig. 3-7-2)

1) Remove the spring ①.
2) Remove the clamp ②, then remove the capstan brake assembly ③.

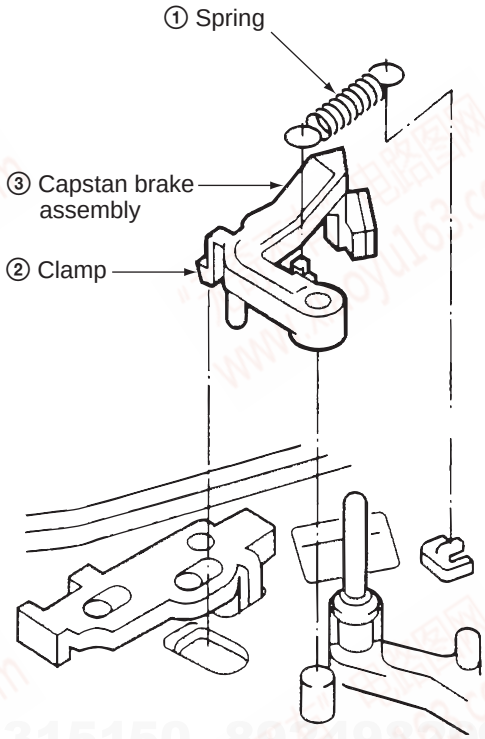

Fig. 3-7-2

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3-8. LOADING MOTOR ASSEMBLY AND WORM GEAR ASSEMBLY (See Fig. 3-8-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the soldering on the lead wires ② of the loading motor assembly from the MC-1 PWB assembly. When you do this, be careful not to let the soldering iron touch any other parts.
3) Press the clamp ③, and remove the loading motor assembly ① and the damper ④. Be careful not to exert too much force on the clamp ③.
4) Remove the worm gear assembly ⑤. To maintain performance, do not dis-assemble the worm gear assembly ⑤.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the teeth of the worm gear assembly.
2. Check that the clamps ③ and ⑥ are securing the loading motor assembly.
3. Check the polarity of the lead wires ② (the orange wire is the positive terminal, and the gray wire is the negative terminal). After soldering the lead wires ②, adjust them so that they do not touch the friction gear assembly.

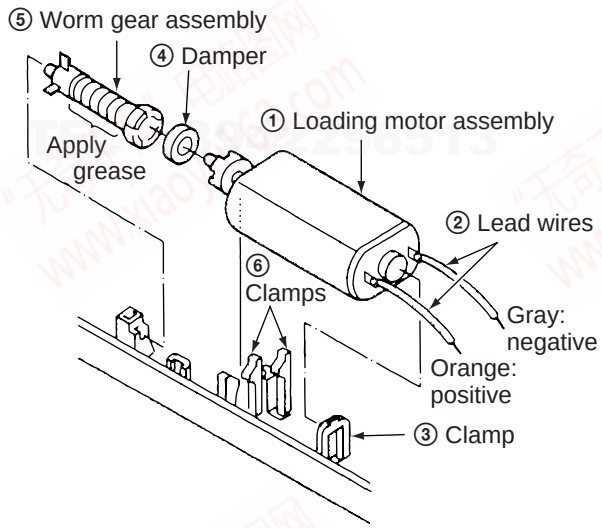

Fig. 3-8-1

3-9. PINCH ROLLER PRESSURE MECHANISM

3-9-1. PINCH ROLLER LEVER ASSEMBLY (See Fig. 3-9-1)

1) Remove the clamp ①, then remove the pinch lift mounting ②.
2) Remove the spring ③, then remove the pinch roller lever assembly ④ off the pinch lift mounting ②. Before you do this, align the Indentation ⑤ on the pinch roller lever assembly ④ with the clamp ⑥ on the pinch lift mounting ②.

ASSEMBLY NOTE:

1. Be careful to keep the surface of the pinch rollerf ree of dust and dirt.

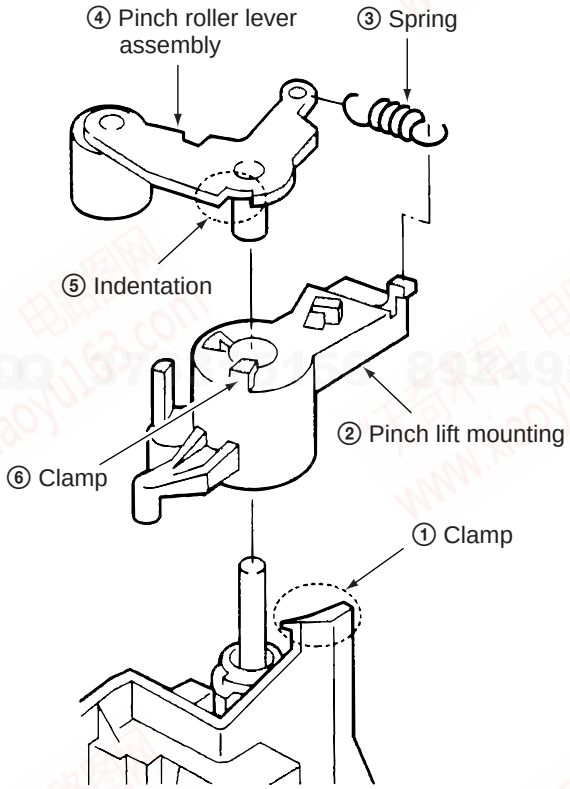

Fig. 3-9-1

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3-9-2. PINCH LIFT CAM AND PINCH CAM GEAR (See Figs. 3-9-2 and 3-9-3)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-9-1 and remove the pinch roller lever assembly.
3) After removing the screw ①, undo the three clamps ②, then remove the opener mounting ③.
4) Remove the clamp ④ and the pinch lift cam ⑤.
5) Remove the pinch cam gear ⑥.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) around the shaft ⑦, all over the teeth Ⓑ of the pinch cam gear ⑥, all over the teeth of the pinch lift cam ⑤, all over the cam grooves Ⓐ, and all over the "V Part Ⓒ" of the opener mounting ③. Apply grease (EM-L30LG) to the outside of the shaft ⑧ and all over the top cam Ⓓ of the pinch cam gear ⑥.
2. Check that the positioning mark ⑩ on the mode switch ⑨ is aligned with the arrow ⑪ on the MC-1 PWB assembly, as shown in Fig. 3-9-3. Then align the triangular mark ⑫ on the pinch cam gear ⑥ with the arrow ⑪ on the MC-1 PWB assembly. After that, align the round hole ⑬ on the pinch lift cam ⑤ with the indentation ⑭ on the pinch cam gear ⑥.
   If you have carried out the above alignments and the pinch roller will still not move up and down or perform the pressing movement correctly, refer to section 3-15 and check the alignment of the gear wheels 1 and 2, the main cam, and the mode switch.

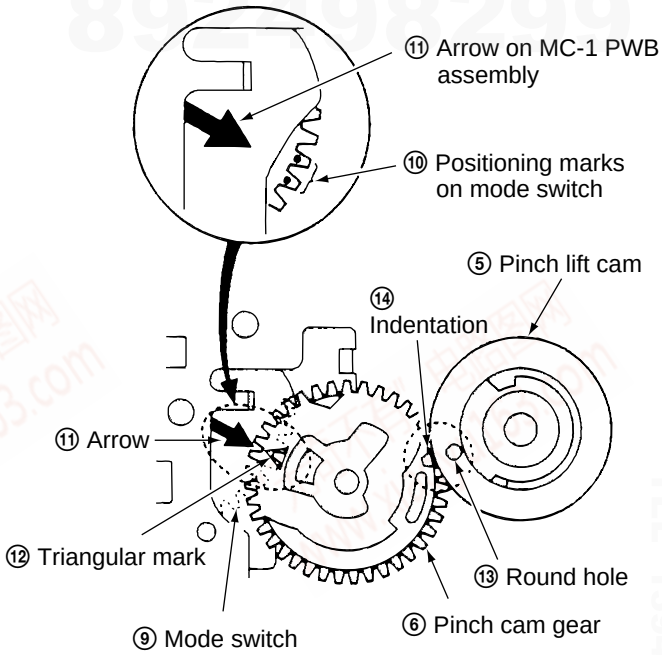

Fig. 3-9-3

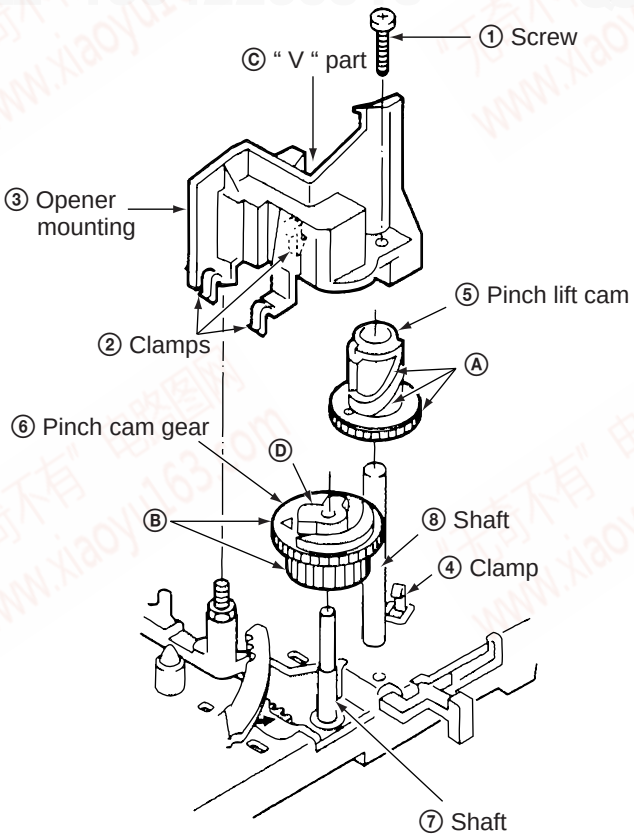

Fig. 3-9-2

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3-10. L GUIDE LEVER ASSEMBLY AND LOAD LEVER ASSEMBLY (See Figs. 3-10-1)

1) Refer to section 3-3 and remove the cassette mechanism assembly.
2) Refer to sections 3-9-1 and 3-9-2, then remove the pinch roller lever assembly and the opener mounting.
3) After removing the washer ④, remove the L guide act lever assembly ⑤.
4) Remove the special nut ⑥, then remove the load lever assembly ⑦ and the L guide lever spring ⑧.

ASSEMBLY NOTES:

1) Apply grease (SGL-505) to the toothed area Ⓐ of the L guide act lever assembly ⑤ and around the shafts ⑨ and ⑩.
2) Refer to section 4-3 and adjust the height of the load lever assembly.
3) Hook the L guide lever spring ⑧ into the stopper ⑬ and load lever assembly ⑦ shown in Fig. A.
4) Put the pin ⑪ of the L guide act lever assembly into the cam groove ⑫ of the crescent slide.

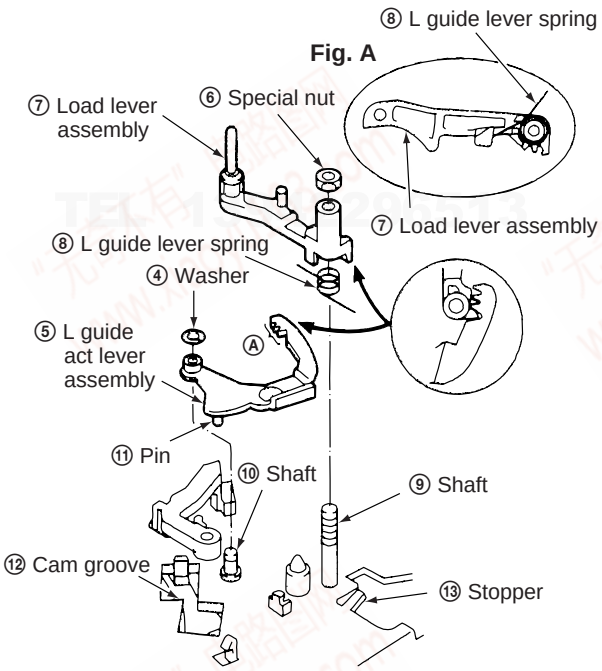

Fig.3-10-1

3-11. BT LEVER ASSEMBLY (See Fig. 3-11-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the BT spring ①.
4) Remove the clamp ② on the underside of the mechanism chassis, then remove the BT lever assembly ③.
5) Remove the clamp ⑤ on the band brake assembly ④. Then, as shown in Fig. A, align the other end of the band brake assembly with the protruding parts of the BT lever assembly ③ before removing it.

ASSEMBLY NOTES:

1. When fitting the BT lever assembly ③, be careful not to bend the stopper ⑥ or the S incline mounting assembly ⑦ out of shape by knocking it against them.
2. Hook the long hook of the BT spring ① into the BT lever assembly ③, as shown in Fig. B.
3. After assembly. make sure that the mountings on both ends of the band brake assembly ④ are positioned as shown in Fig. C.
4. After assembly, refer to section 4-2-1, and make the appropriate adjustment.

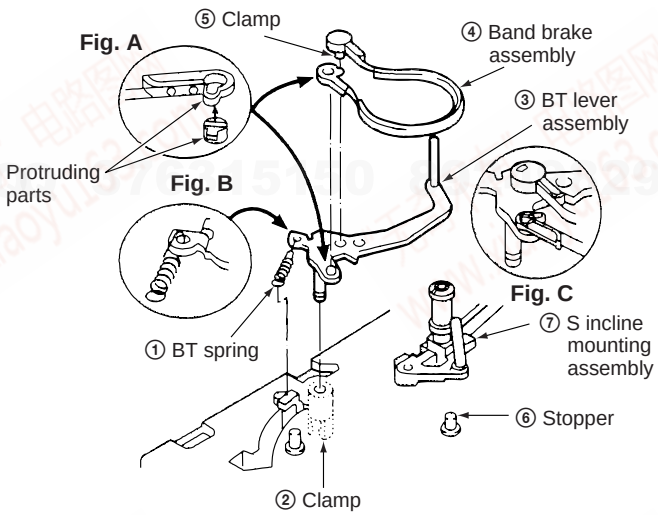

Fig. 3-11-1

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3-12. REEL DRIVE MECHANISM

3-12-1. REEL BELT, REEL PULLEY, FRICTION GEAR ASSEMBLY AND CLUTCH CHANGE LEVER (See Fig. 3-12-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the reel belt ① from the reel pulley ②.
3) Take off the washer ③ and remove the reel pulley ②.
4) Take off the washer ④ and remove the friction gear assembly ⑤.
5) Remove the clutch change spring ⑥.
6) Remove the clamp ⑦ gripping the top of the mechanism chassis, then remove the clutch change lever ⑧.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑨ and ⑩, apply a drop of oil (NT-68) to each.
2. Be careful not to get any grease on the reel belt ①.

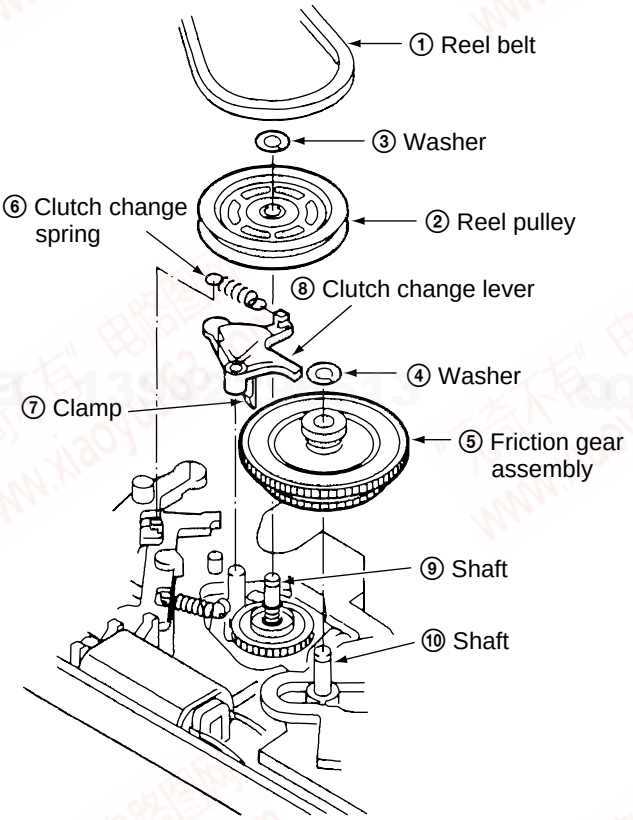

Fig. 3-12-1

3-12-2. CLUTCH MOUNTING ASSEMBLY (See Fig.3-12-2)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Refer to section 3-12-1 and remove the reel pulley.
3) Remove the two screws ①, then remove the clutch mounting assembly ②.

ASSEMBLY NOTES:

1. Align the two holes 3 with the shafts ④ and ⑤. Be careful not to press part A of the clutch mounting assembly ② against the band brake assembly.
2. After assembly, make sure that the clamp on the clutch change lever has snapped into the chassis.

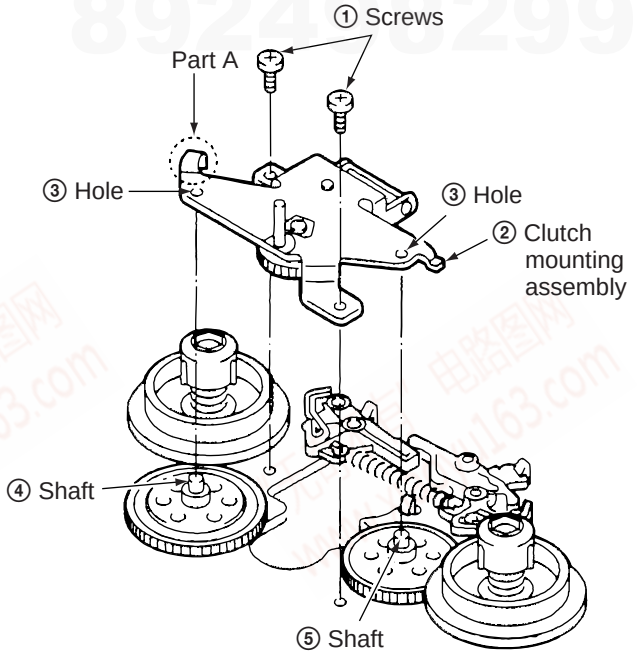

Fig. 3-12-2

3-12-3. S SOFT LEVER, SUPPLY REEL ASSEMBLY AND S REEL GEAR (See Fig. 3-12-3)

1) Remove the S soft spring ①.
2) Remove the clamp ②, then remove the S soft lever ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Refer to section 3-11 and remove the band brake assembly, then remove the supply reel assembly ④ and the S reel gear ⑤.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑥ and ⑦, apply a drop of oil (NT-68) to each.
2. After assembly, clean the side of the supply reel assembly ④.

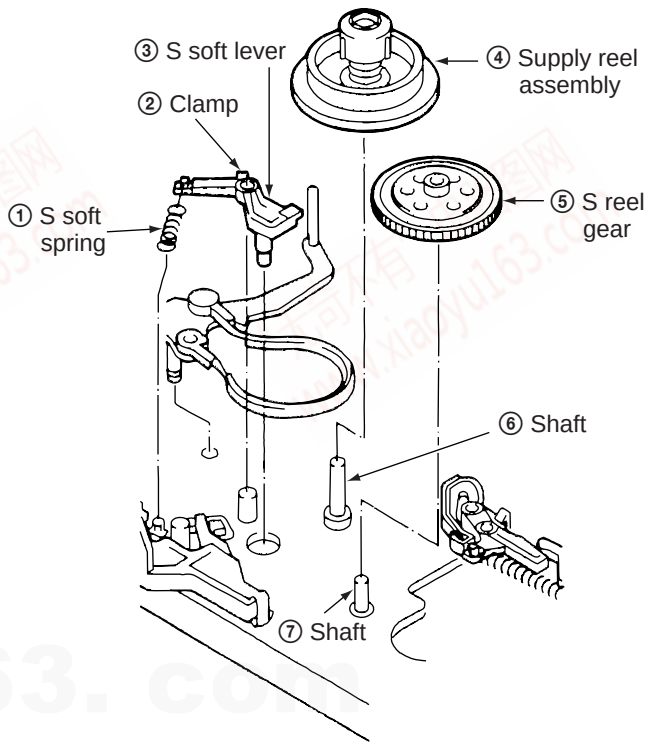

Fig. 3-12-3

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3-12-4. T SOFT BRAKE ASSEMBLY, TAKE UP REEL ASSEMBLY, T REEL GEAR (See Fig. 3-12-4)

1) Remove the T soft spring ①.
2) Remove the clamp ②, then remove the T soft brake assembly ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Pressing the T brake assembly ④ in the direction of the arrow, remove the take up reel assembly ⑤ and the T reel gear ⑥.

ASSEMBLY NOTE:

1. After cleaning the shafts ⑦ and ⑧, apply a drop of oil (NT-68) to each.

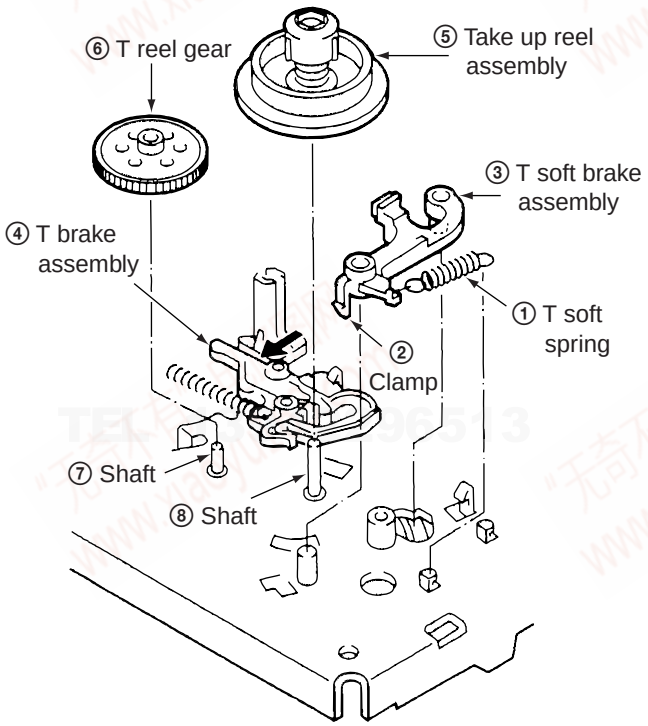

Fig.3-12-4

3-13. BRAKES

3-13-1. S BRAKE ASSEMBLY, T BRAKE ASSEMBLY, T BRAKE ACT SLIDE (See Fig. 3-13-1)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the two clamps ①, then remove the T brake act slide ②. (Note: You can remove the S brake assembly ⑦ and the T brake assembly ⑤ without removing the T brake act slide ②.)
3) Remove the brake spring ③.
4) Remove the two clamps ④ simultaneously, then remove the T brake assembly ⑤.
5) Remove the clamp ⑥, then remove the S brake assembly ⑦.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the shafts ⑧ and ⑨.
2. When fitting the T brake act slide ②, align the mark ⑩ with the shaft ⑪.

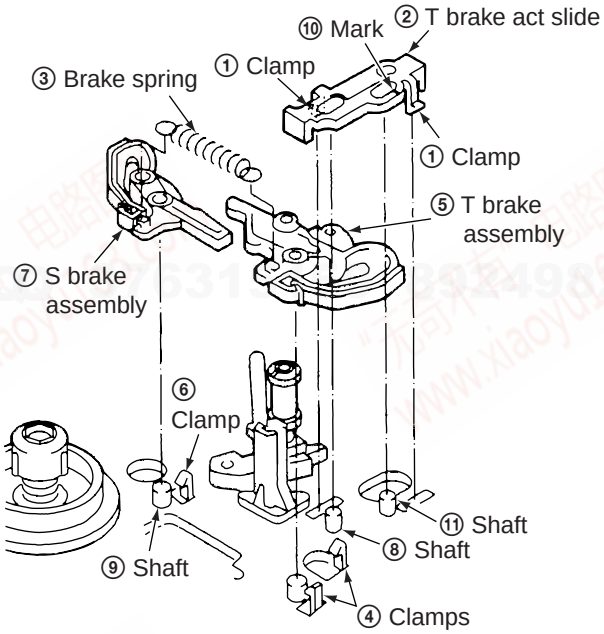

Fig. 3-13-1

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3-13-2. BRAKE CONTROL LEVER AND BRAKE ACT LEVER ASSEMBLY (See Fig. 3-13-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the wheel gear 2.
3) Refer to sections 3-12-1, then remove the reel belt and the reel pulley.
4) Remove the clamp ①, then remove the wheel gear 1 ②.
5) Remove the clutch change spring ③.
6) Remove the clamps ④ and ⑤, then remove the brake control lever ⑥. Remove the clamp ④ on the topside of the mechanlsm chassis.
7) Remove the brake return spring ⑦.
8) Refer to section 3-8 and remove the worm gear assembly.
9) Remove the clamp ⑧ and clamp ⑤, then remove the brake act lever assembly ⑨. To maintain the performance of the brake act lever assembly ⑨, do not disassemble it.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the shafts ⑩ and ⑪, to the teeth of the wheel gear 1 ②. and to the pin ⑫ of the brake control lever ⑥ .
2. Put the pin ⑬ of the brake control lever ⑥ into the cam groove ⑭ of the crescent slide.
3. Before fitting the wheel gear 1 ② , align the hole ⑮ with the hole ⑯ on the mechanism chassis.
4. Refer to section 3-15 and align the wheel gear 2.

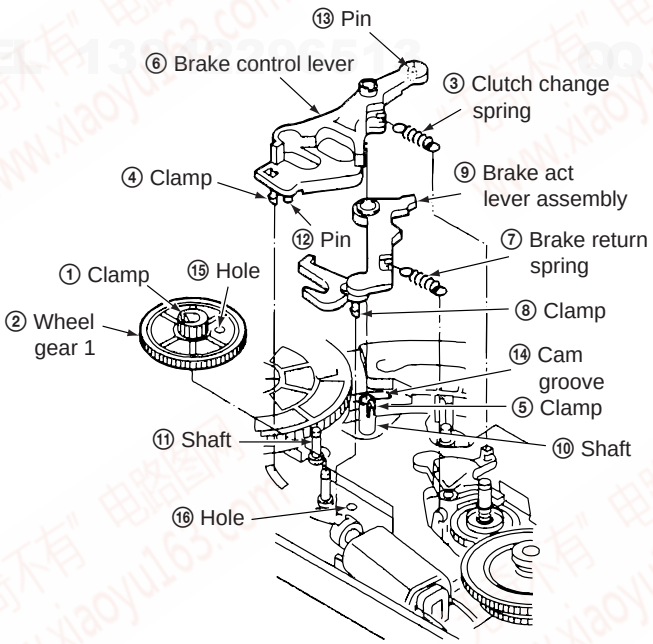

Fig. 3-13-2

3-13-3. S BRAKE ACT SLIDE AND BT SPRING LEVER ASSEMBLY (See Figs. 3-13-3 and 3-13-4)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-12-1 and remove the friction gear assembly.
3) Slide the S brake act slide ① in the direction of the arrow Ⓐ , then remove it.
4) Refer to section 3-11 and remove the BTspring.
5) Press the BTspring lever assembly ② until it touches the pin ③, then remove it.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the shaft ④ shown in Fig. 3-13-3, and to the BT spring lever assembiy ② and the S brake act slide ① shown in Fig. 3-13-4.
2. After mounting the BT spring lever assembly ② on the Shaft ④, hook the BT spring onto the clamp ⑤ and press it until it touches the pin ⑥.
3. Make sure that the clamps ⑦, ⑧ and ⑨ have snapped Into the S brake act slide ①. Align the arrow ⑩ on the S brake act slide ① with the arrow ⑪ on the mechanism chassis.

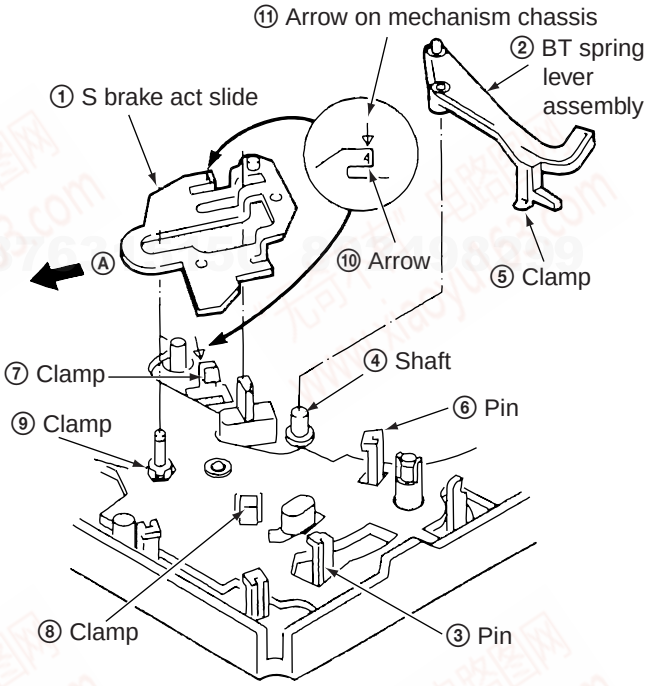

Fig. 3-13-3

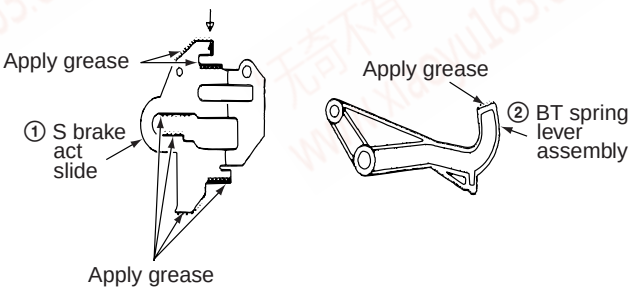

Fig. 3-13-4

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3-14. GUIDES

3-14-1. GUIDE ROLLER ASSEMBLY (See Fig. 3-14-1)

1) Unscrew the two screws ①. When you do this, be careful not to damage the cylinder or the video head.
2) Remove the two guide roller assemblies ② by unscrewing them anticlockwise.

ASSEMBLY NOTES:

1. Tighten the two screws ① to a torque of 600 g/cm. After tightening, apply a screw-locking glue.
2. After replacing the parts, be sure to clean the guide roller and carry out tape path adjustment as described in section 4-3.

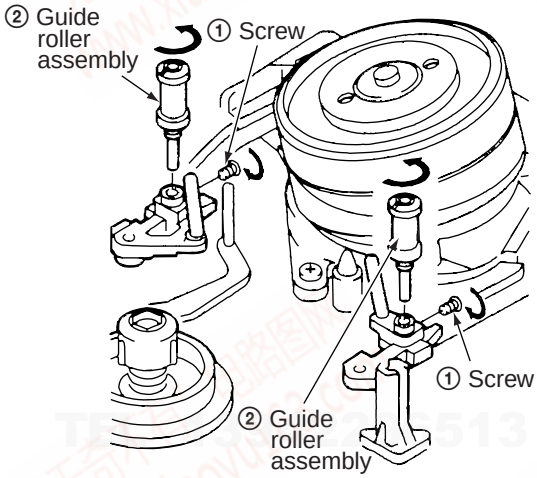

Fig. 3-14-1

3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES (See Fig. 3-14-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-4 and remove the cleaner lever.
3) Remove the four screws ⑤ and take off the two catcher mountings ⑥.
4) Refer to section 3-1 and rotate the loading motor in the PLAY direction until tape loading is completed.
5) Shift the S incline mounting assembly ① slightly, in the direction of the arrow Ⓐ, then remove it from the S load lever assembly ②.
6) Shift the T incline mounting assembly ③ slightly, in the direction of the arrow Ⓑ, then remove it from the T load lever assembly ④.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the rail (top, underside and sides) on the mechanism chassis.
2. When fitting the S and T incline mounting assemblies ① and ③ into the rail, turn the loading motor manually in the EJECT direction. When tape unloading begins, watch out in case the S and T incline mounting assemblies ① and ③ get caught in the rail.
3. Aline the dowels on the catcher mounting ⑥ with the holes ⑦ in the mechanism chassis.
4. After repiacing the parts, clean the cylinder and the roller guide, then adjust the tape path as described in section 4-3.

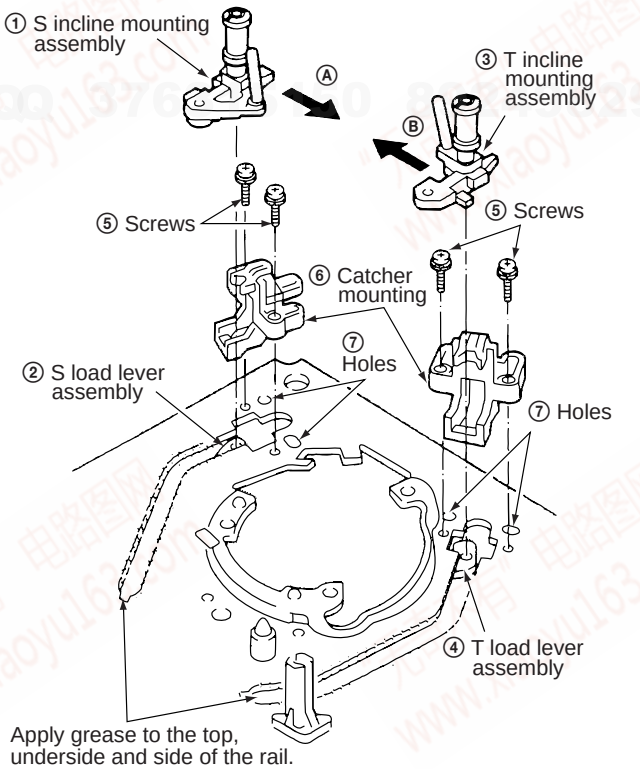

Fig. 3-14-2

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3-15. WHEEL GEAR 2, MAIN CAM AND MODE SWITCH (See Figs. 3-15-1 and 3-15-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-7-1, then remove the harness mounting.
3) Remove the clamp ①, then remove the wheel gear 2 ②.
4) Remove the washer ③, then remove the main cam ④.
5) After unscrewing the screw ⑤, remove the soldering from the terminal of the mode switch ⑥.
6) Remove the clamp ⑦, then remove the mode switch ⑥.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the shafts ⑧, ⑨ and ⑩, to the teeth of the main cam ④, and to the all over the cam groove of main cam ④.
2. When fitting the modes witch ⑥, align it in ⒶⒷ order as shown in Fig. 3-15-2. The alignment of the part Ⓑ is shown in Fig. A. Position the teeth of the mode switch ⑥ so that the sixth tooth space left of part Ⓐ is aligned with the triangular mark on the pinch cam gear ⑪. After aligning part Ⓑ, refer to section 3-9-2 and check the positioning of the mode switch, the pinch cam gear and the pinch lift cam.
3. Beforehand, remove the soldering from the soldered part of the MC-1 PWB assembly, in order to prevent the mode switch ⑥ being warped. Solder the mode switch ⑥ after tightening the screw ⑤ (See Fig. 3-15-1) .
4. Align the hole in the crescent slide ⑫ with the hole in the mechanism chassis, as shown at point Ⓖ in Fig. 3-15-2 (refer to section 3-16 and see the holes ⑤ and ⑥ in Fig. 3-16-1).
5. When fitting the main cam ④, position the mode switch ⑥ and the front rack gear ⑬ as shown at points Ⓒ and Ⓓ respectively in Fig. 3-15-2.
6. When fitting the gear wheel 2 ②, position the main cam ④ and the wheel gear 1 ⑭ as shown at points Ⓔ and Ⓕ respectively in Fig. 3-15-2.

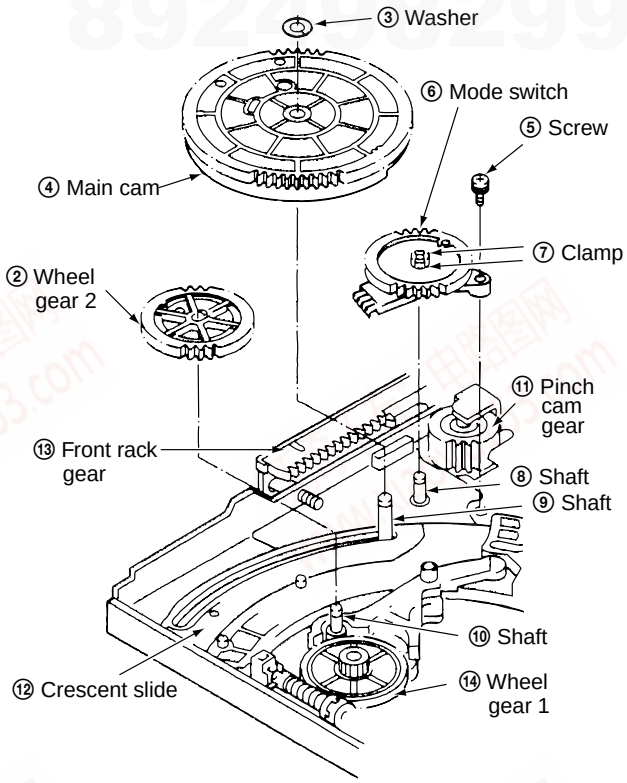

Fig. 3-15-1

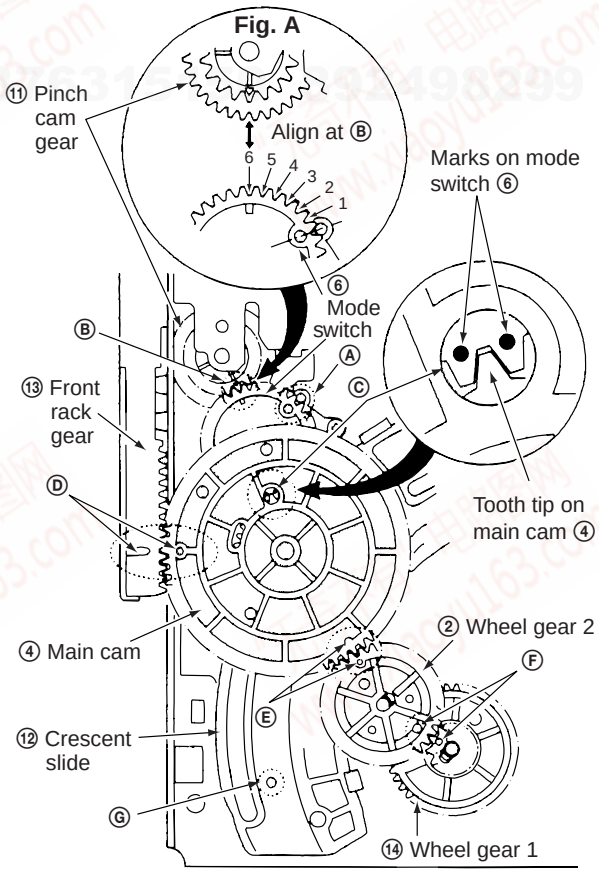

Fig. 3-15-2

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3-16. CRESCENT SLIDE (See Figs. 3-16-1 and 3-16-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Refer to section 3-7-2 and remove the capstan brake assembly.
4) Refer to section 3-12-4 and remove the T soft brake assembly.
5) Refer to section 3-13-1 and remove the T brake act slide.
6) Refer to section 3-12-1, then remove the reel belt and the reel pulley.
7) Refer to section 3-15, then remove the wheel gear 2 and the main cam.
8) Refer to section 3-13-2, then remove the wheel gear 1 and the brake control lever.
9) Remove the two screws ⑪, then remove the crescent mounting ⑫.
10) Remove the clamps ① and ②, then raise the right end of the crescent slide ③ slightly. Slide the crescent slide ③ to the right until it comes away from the clamp ④, then remove it.

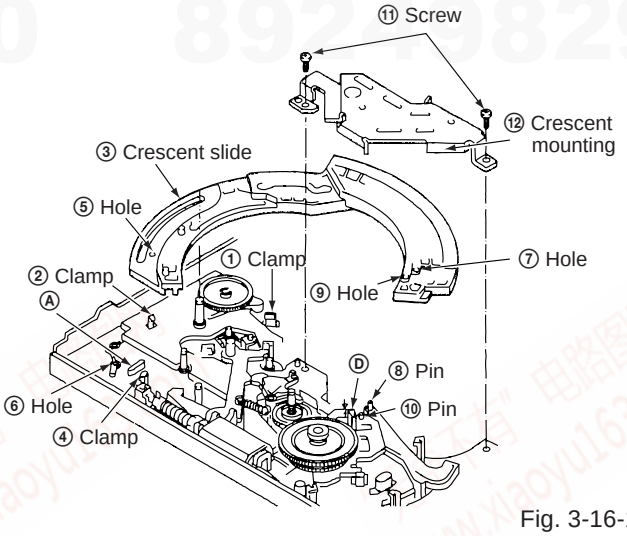

Fig. 3-16-1

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the points Ⓐ, Ⓑ, Ⓒ and Ⓓ in Fig. 3-16-1, and to the crescent slide ③ shown in Fig. 3-16-2.
2. Before fitting the crescent slide ③, refer to section 3-13-3 and align the arrow on the S brake act slide with the arrow on the mechanism chassis. Then refer to Fig. 3-17-3 and check that the S load gear and the T load gear have completed tape unloading.
3. When assembling the parts, raise the right side of the crescent slide ③ slightly, and keeping it in this position, slot the left side into the clamp ④, then align the hole ⑤ with the hole ⑥ in the mechanism chassis. When you do this, check that the hole ⑦ is aligned with the pin ⑧ on the BT spring lever assembly, and that the hole ⑨ is aligned with the pin ⑩ on the S brake act slide, before pressing the crescent slide ③ into place. Check that the clamps ①, ② and ④ are engaged.
4. After assembly, check that each leverand each brake is working properly.

Apply grease to the areas shown in ▭
• The places marked by dots should be greased particularly generously.

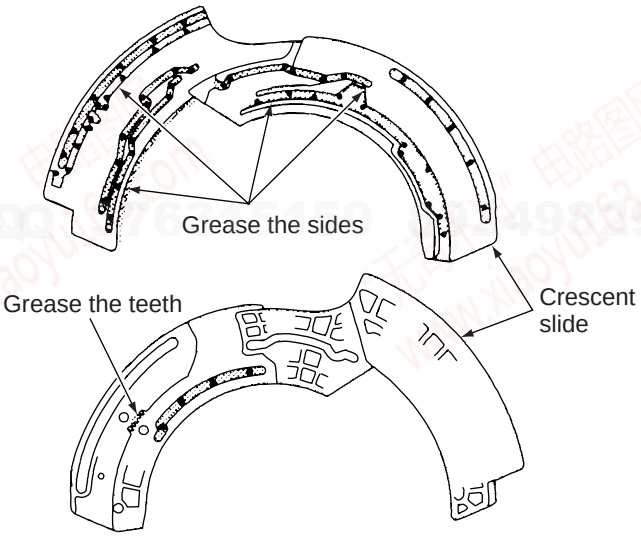

Fig. 3-16-2

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3-17. S LOAD GEAR, T LOAD GEAR, S LOAD LEVER ASSEMBLY AND T LOAD LEVER ASSEMBLY (See Figs. 3-17-1. 3-17-2 and 3-17-3)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-14-2 and remove the S and T incline mounting assemblies.
3) Remove the clamp ①, then remove the components: the S load gear ②, the S load spring ③ and the S load lever assembly ④. When you do this, be careful not to damage the clamp ①, which can be damaged easily. Again, be careful when you disassemble the components, as the S load spring ③ will spring out.
4) Remove the following components: the T load gear ⑤, the T load spring ⑥, and the T load lever assembly ⑦. Be careful when you disassemble the components, as the T load spring ⑥ will spring out.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the shafts ⑧, ⑨ and parts A shown in Fig. 3-17-1. Then apply grease (SGL-505) to the parts shown in Fig. 3-17-2.
2. When fitting the S load gear ② and the T load gear ⑤ align them in the tape-loaded state, as shown in Fig. A in Fig. 3-17-3. Again, after completing tape-unloading on these gears, check that they are positioned as shown in Fig. B in Fig. 3-17-3, then refer to section 3-14-2 and fit the S and T incline mounting assemblies.

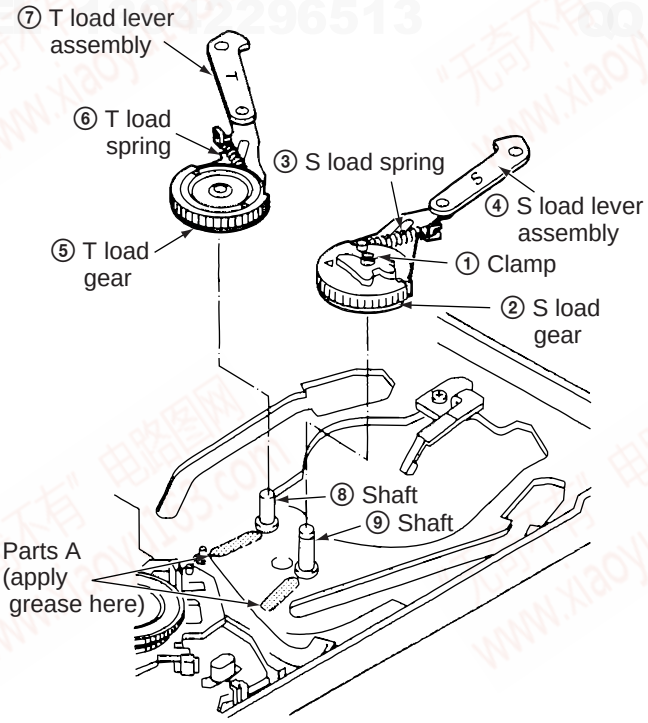
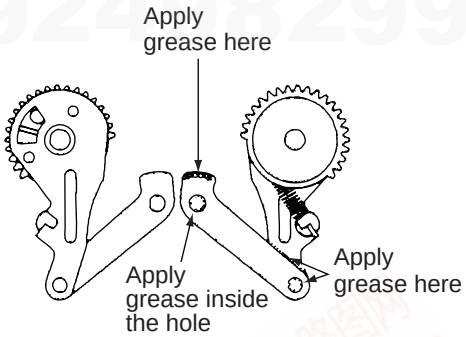


Fig. 3-17-1

(T side)



(S side)

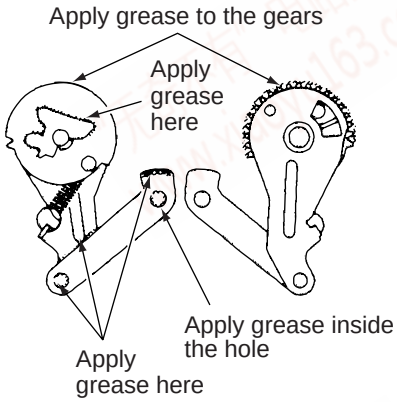


Fig. 3-17-2

Fig. A: When tape loading is complete

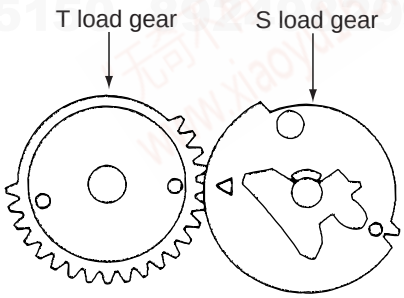


Fig. B: When tape unloading is complete

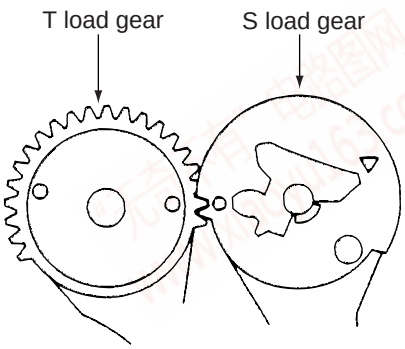


Fig. 3-17-3

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3-18. TAPE SENSORS, REEL SENSOR AND EP SW LEVER

3-18-1 TAPE TOP SENSOR AND TAPE END SENSOR (See Fig. 3-18-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diodes ①, ② and the LED ③. When removing the photo diode ② on the tape top sensor side, refer to section 3-15 and remove the main cam.

ASSEMBLY NOTES:

1. Fit the photo diodes ① and ② so that their photoreceptors to face the LED ③, as shown in Fig. 3-18-1. Align the cuts in the LED ③ and the holder ④.
   Push the photo diodes ①, ② and the LED ③ as far down as they will go, so that they do not protrude above the top of their holders.
2. Do the soldering quickly.

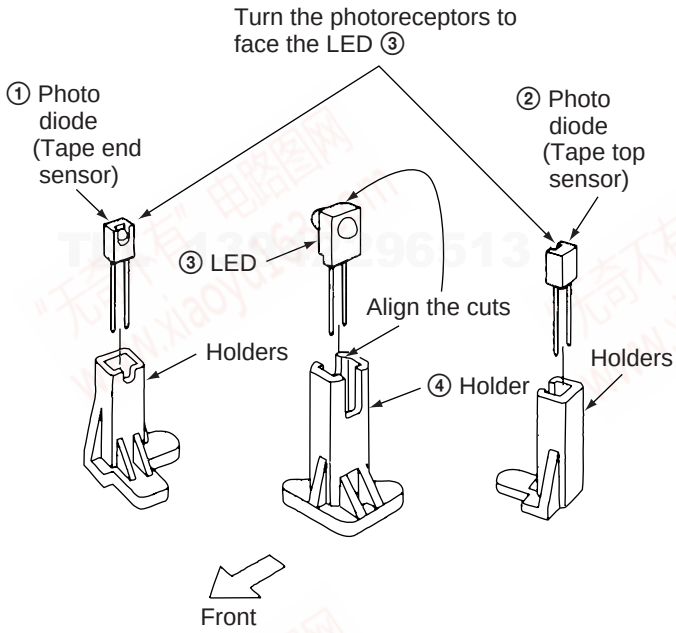

Fig. 3-18-1

3-18-2. REEL SENSOR (See Fig. 3-18-2)

1) Refer to sections 3-12-2 and 3-12-4. then remove the clutch mounting assembly, the T soft brake assembly and the take up reel assembly.
2) Refer to section 3-13-2, then remove the wheel gear 2, the wheel gear 1. and the brake control lever.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diode (reel sensor) ①.

ASSEMBLY NOTES:

1. When assembling the parts, align the cut on the photo diode (reel sensor) ① with the protrusion on the mechanism chassis ②.
2. Do the soldering quickly.

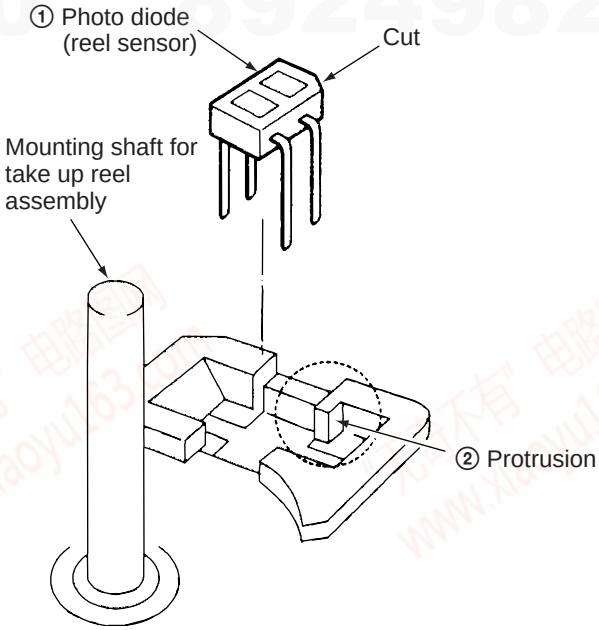

Fig. 3-18-2

3-18-3. EP SWITCH LEVER (See Fig. 3-18-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the EP switch spring ①.
3) Remove the clamp ②, then remove the EP switch lever ③.

ASSEMBLY NOTES:

1. Apply grease (SGL-505) to the protrusion ④ on the back of the EP switch lever ③.
2. After fitting the cassette mechanism assembly. check that in EJECT mode. the EP switch lever ③ does not touch the EP switch ⑤ .

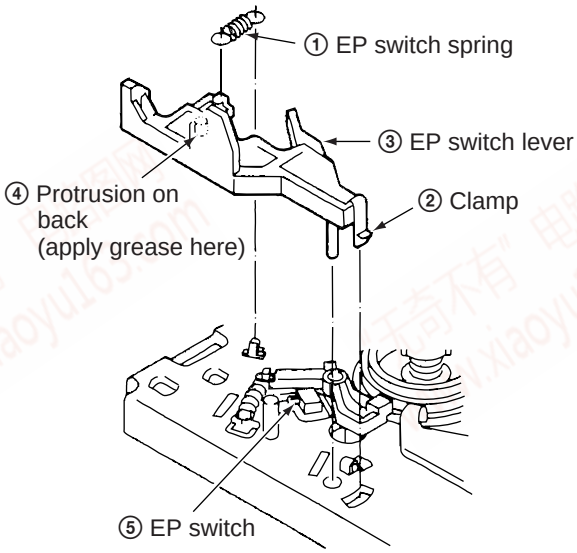

Fig. 3-18-3

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4. MECHANISM CHECKS AND ADJUSTMENTS

4-1. REEL TABLE TORQUE CHECK

1) With the power switch turned OFF, stick black vinyl tape over the photo diodes of the tape sensors. Then turn the power switch ON. Front loading will begin. Refer to section 3-2 and Fig. 3-2-2. and release the locks of the tray lock lever and the lid opener lever.

NOTES:

1. The measurements must be taken without any incandescent light or daylight.
2. If the mechanism cannot be put into PLAY, FF or REW mode by the method described in 1) above, make a dummy cassette tape, as shown in Fig. 4-1-2. The dummy cassette tape is made as follows: Unscrew the five screws on the underside, remove the reels, leaf springs and other parts on the supply and take up sides, make holes in the upper surface as wide as the reel diameter, then assemble the parts.

2) Put the mechanism into REW mode, wait at least 10 seconds, then measure the torque value of the reel table on the supply side. It should be at least 600 g/cm. Take the measurement with the torque dial gauge (H-7099-039-H/H-7099-035-H) held in position in your hand (lock torque). While taking the measurement, rotate the reel table (take up reel assembly) on the take up side with your hand so that the reel sensor does not respond.

3) After switching to FF mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be at least 600g/cm (lock torque).

4) After switching to PLAY mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be between 80 and 140g/cm (lock torque).

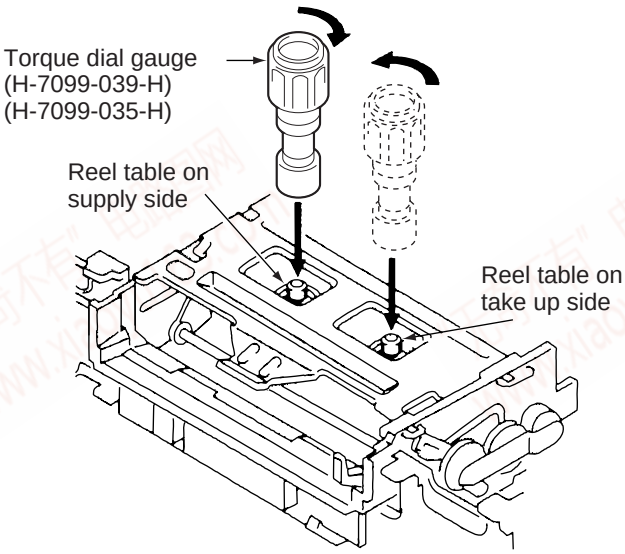

Fig. 4-1-1

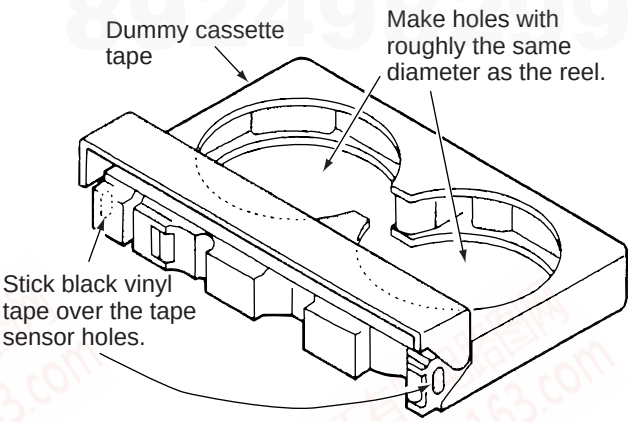

Fig. 4-1-2

4-2. ADJUSTING THE BT LEVER ASSEMBLY POSITION AND CHECKING THE BACK TENSION TORQUE IN PLAY MODE

4-2-1. BT LEVER POLE POSITION ADJUSTMENT (See Fig. 4-2-1)

1) Without loading a cassette tape, put the mechanism into PLAY mode (turn the power switch OFF).
2) Adjust point Ⓐ on the band brake assembly by rotating it so that the tip of the BT lever assembly is aligned with the line on the left side of the mechanism chassis.
3) Refer to section 4-2-2 and check that the back tension torque is between 30 and 50g/cm.

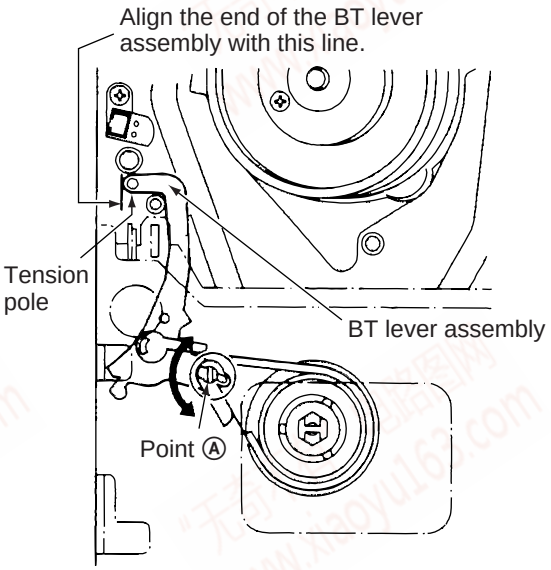

Fig. 4-2-1

4-2-2. CHECKING THE BACK TENSION TORQUE PLAY MODE

1) Mount the cassette torque meter (VHT-063S) and switch to PLAY mode.
2) Check that the back tension torque is between 30 and 50g/cm .

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4-3. TAPE PATH ADJUSTMENT

In normal circumstances, the tape path system does not need to be adjusted. However, after removing or replacing one of the parts shown in Fig. 4-3-1, you should check and adjust the tape path. The adjustment of the tape path is carried out while monitoring the envelope waveform of the video head output, using an oscilloscope. To make sure that the tape drawn off the reel runs freely and without excessive tension along all the tape guides and cylinders (drums), it is also important to check each tape guide by eye.

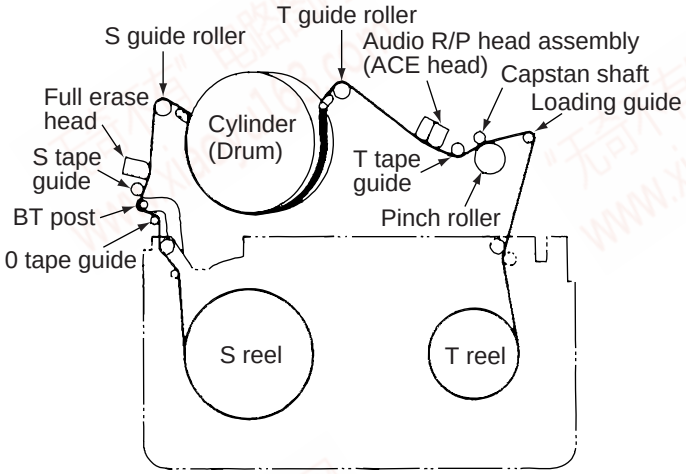

Fig. 4-3-1

4-3-1. ADJUSTMENT PROCEDURE

1. Select a PAL or NTSC alignment tape or blank cassette tape, according to the transmission system of the VCR you are repairing.

NTSC: For models with 525 scanning lines and a field frequency of 60Hz
PAL: For models with 625 scanning lnes and a field frequency of 50Hz

2. Clean the tape guides, the cylinder(drum), the capstan Shaft, the audio R/P head (ACE head) and the full erase head.
3. Using an oscilloscope, adjust the height of the guide roller and carry out horizontal position adjustment, height adjustment and azimuth adjustment on the audio R/P head (ACE head). When observing the envelope waveform, bring the CH-1 probe into contact with the envelope waveform test point, and bring the CH-2 probe into contact with the switching pulse (SW P) test point. While adjusting the tape path, set the trigger at the low side of the switching pulse (SW P) in order to observe the output waveform on the CH-1 side of the video head.

NOTE:The contact point for the oscilloscope varies from one model to another, so to find the correct point for your model, refer to the figure entitled “Test point for tape path adjustment” in the electrical circuit section of the service manual.

4. When checking the tape path by eye, use a dental mirror.

4-3-2. LOAD LEVER ASSEMBLY HEIGHT ADJUSTMENT (See Fig. 4-3-2)

1. Refer to sections 3-9-2, and remove the opener mountIng .
2. Position the height adjustment tool (J-6090-055-A) ③ under the full surface of the protrusion ② on the load lever assembly ①, as shown in Fig. 4-3-2.
3. Using your firlgers, gently screw the adjustment nut ④ clockwise into the nut box (J-6082-045-A) ⑤ until the protrusion ② of the load lever assembly ① touches the height adjustment tool (J-6090-055-A) ③ and the screw starts to feel tight. Next, loosen the adjustment nut ④ by 270° anticlockwise.
4. Load a cassette tape (NTSC: T-160, PAL: E-240) and switch to PLAY mode. Check that when you do this, no scratches appear on the upper or lower edges of the tape. If scratches do appear, re-adjust the height.

Arrange the equipment so that the whole surface of the projection on the load lever assembly is positioned over the height adjustment tool (J-6090-055-A) when seen from directly overhead.

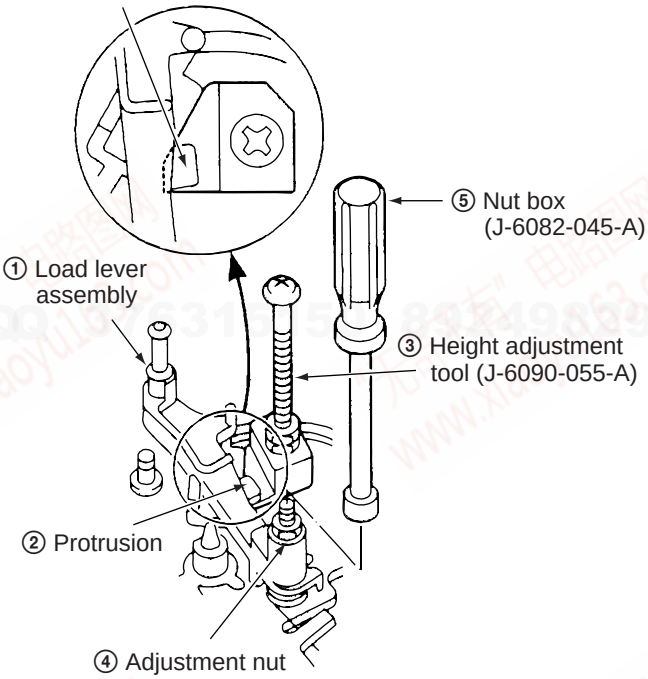

Fig. 4-3-2

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4-3-3. GUIDE ROLLER HEIGHT ADJUSTMENT (See Figs. 4-3-3 and 4-3-4)

1) Play the Alignment Tape (NTSC: KRV-52NE, PAL: KRV-52PL) and check that the envelope waveform is at its maximum at the tracking centre. Then, after loosening the S guide roller and the T guide roller by rotating them anticlockwise, tighten them in turn until the envelope waveform becomes flat. If the envelope waveform is not at its maximum at the tracking centre, refer to section 4-3-4 and carry out a rough adjustment of the horizontal position of the audio R/P head (ACE head) before adjusting the guide rollers.
2) Adjust the S guide roller.
   ① Press the tracking button (Channel –), and check whether, when the envelope waveform has reached 50% of its maximum, the front half of the envelope waveform is flat. If not, fine-tune the S guide roller as follows.
   a. If the front half of the envelope waveform is as shown in Fig. 4-3-4 (a), this means that you have pressed the S guide roller too far. Therefore, loosen it slightly, and when it is in the state shown in Fig. 4-3-4 (b), tighten it again, stopping when the envelope waveform is flat.
   b. If the front half of the envelope waveform is as shown in Fig. 4-3-4 (b), this means you have not pressed the S guide roller far enough. Therefore, tighten it slightly, stopping when the envelope waveform becomes flat.
   c. If the front half of the envelope waveform is as shown in Fig. 4-3-4 (c), it may happen that when you tighten the S guide roller, the wrapper waveform does not disappear, but sinks into the flat part, as shown in Fig. 4-3-4 (d). If this happens, the status shown in Fig. 4-3-4 (c) is normal, so loosen the S guide roller, then tighten it again until the envelope waveform is as shown in Fig. 4-3-4 (c).
   ② Check that at the tracking centre, the output of the front half of the envelope waveform is not less than 80% of the maximum.
   ③ Rotate the S guide roller 20° anticlockwise.
3) AdjusttheTguide roller.
   ① press the tracking button (channel –) and check whether, when the envelope waveform is 50% of maximum, the back half of the envelope waveform is flat. If not, loosen the T guide roller slightly, then tighten it gradually until the back half of the envelope waveform becomes flat.
   ② Check that the output for the back half of the envelope waveform is at its maximum at the tracking centre.
4) Check that the envelope waveform does not fluctuate when you switch from F-SEARCH to PLAY or from R-SEARCH to PLAY. If it does fluctuate, repeat steps 3) and 4).

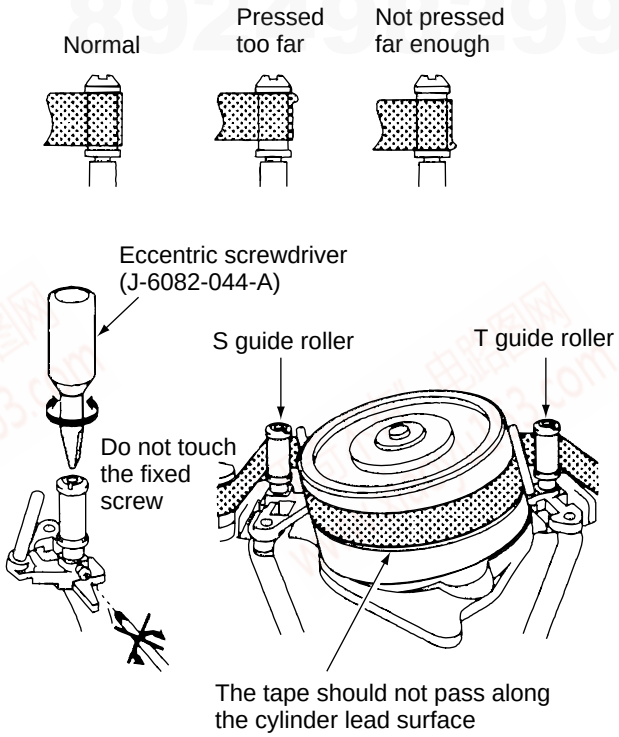
Normal
Pressed too far
Not pressed far enough
Eccentric screwdriver (J-6082-044-A)
S guide roller
T guide roller
Do not touch the fixed screw
The tape should not pass along the cylinder lead surface

Fig. 4-3-3

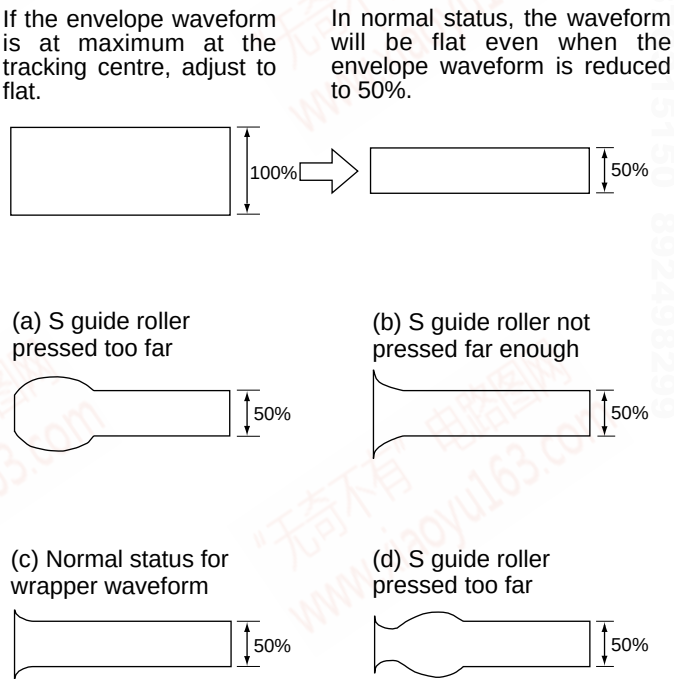
If the envelope waveform is at maximum at the tracking centre, adjust to flat.
In normal status, the waveform will be flat even when the envelope waveform is reduced to 50%.
100%
50%
(a) S guide roller pressed too far
50%
(b) S guide roller not pressed far enough
50%
(c) Normal status for wrapper waveform
50%
(d) S guide roller pressed too far
50%

Fig. 4-3-4

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4-3-4. AUDIO R/P HEAD (ACE HEAD) HEIGHT ADJUSTMENT, AZIMUTH ADJUSTMENT AND HORIZONTAL POSITION ADJUSTMENT

(I) Azimuth adjustment (See Fig. 4-3-5)

1) Play the alignment tape (NTSC: KRV-52NE, PAL: KRV-52PL) and observe the waveform of the audio output, using an oscilloscope.
2) Loosen the height adjustment screw in the counter-clockwise direction and decrease the amplitude of the audio output waveform. In this state, tighten the screw in the clockwise direcion and maximize the amplitude. Slightly tighten the screw further in the clockwise direction and decrease the amplitude, and then loosen it slowly in the counterclockwise direcion until the amplitude starts to reach the maximum.
3) Set the amplitude of the audio output waveform to maximum by rotating the azimuth adjustment screw.
4) Make sure that the tape edge is running between the top of the audio head and the bottom of the control head.
   Gaps A and B should be roughly equal.

NOTE: Rotate the adjustment screw with a slotted screw-driver. Do not apply excessive force vertically. As the height adjustment screw also adjusts tilt, rotate it slowly. Do not rotate it excessively. And apart from the this screw, and height adjustment screw, the screws is precisely adjusted before shipment from the factory, and should not be tampered with. Tampering with these screws can lead to scratching of the tape and other problems.

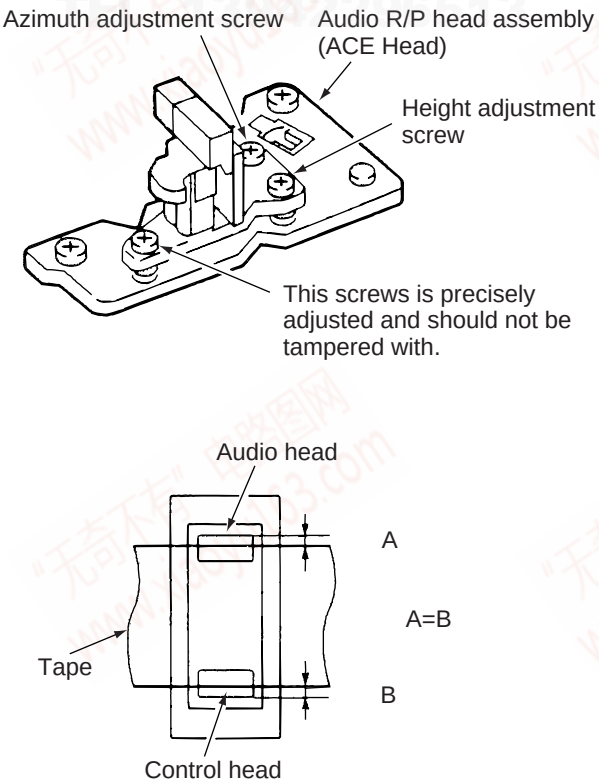

Fig. 4-3-5

(2) Horizontal position adjustment (See Fig. 4-3-6)

1) Play the alignment tape (NTSC: KRV-52NE, PAL: KRV-52PL).
2) Press the tracking buttons (channel + and channel –) simultaneously and set the tracking to the centre.
3) Using an oscilloscope, observe the waveform of the video head output.
4) Loosen the two fixed screws on the audio R/P head (ACE head) by between 20° and 30° anticlockwise.
5) Using a slotted screwdriver, adjust the position of the audio R/P head (ACE head). At the position where the amplitude of the envelope waveform is at its maximum at the tracking centre, tighten the fixed screw on the audio R/P head (ACE head). When you do this, check that the envelope waveform changes equally whether the tracking is shifted by pressing the tracking button in the plus or the minus direction.
6) Play the alignment tape (NTSC: KRV-52NE, PAL: KRV-52PL) and check that the amplitude of the envelope waveform is at its maximum at the tracking centre. If not, repeat steps 1) to 6).
7) Refer to the electrical adjustments section of the service manual, and adjust the switching position of the servo circuit.

NOTE:

1. When you press the tracking buttons (channel+ and channel –) simultaneously, the tracking is reset to the tracking centre. When the tracking is at the tracking centre, the message “T - : - “ will appear in place of the clock display on the front panel. If you keep pressing the channel– button the messages “T- : “ and “T - - : “ will appear, while if you keep pressing the channel + button, the messages “T : - ” and “T : - - “ will appear. Three seconds after you stop pressing the tracking buttons, the clock displav will re-appear.
2. The check described in paragraph 6) is not necessary for models in which the only tape speed is SP mode.

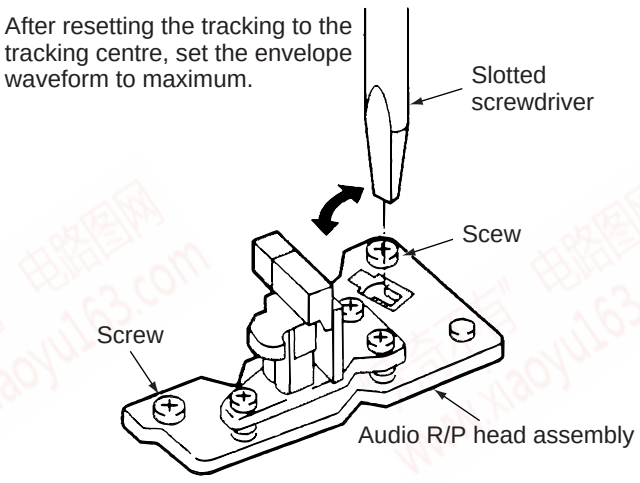
After resetting the tracking to the tracking centre, set the envelope waveform to maximum.
Slotted screwdriver
Scew
Screw
Audio R/P head assembly

Fig. 4-3-6

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4-3-5. CHECKING AFTER ADJUSTMENT

1) Play the alignment tape (NTSC: KRV-52NE, PAL: KRV-52PL) and check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform.
2) Load a cassette tape (NTSC:T-120, PAL: E-180) and use it to record and replay. Check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform. (When recording on the tape, input 1kHz to the audio input terminal. Use a scratch-free cassette tape (NTSC: T-120, PAL: E-180).) Check that at the tracking centre, the front half down and back half down are not more than 20% of the value at the point where the envelope waveform amplitude is at its maximum.
3) Check that the envelope waveform is activated immediately when you switch from PLAY to R-SEARCH or from R-SEARCH to PLAY. Check that there is no slack in the tape next to the pinch roller.
4) Check that the envelope waveform is activated immediately when you switch to PLAY from FF, REW, F-SEARCH, R-SEARCH or STOP mode. Check that there is no slack in the tape next to the pinch roller.
5) Check that the tape is not curling or riding up on the upper or lower flanges of the tape guides in PLAY, FF, REW, F-SEARCH or R-SEARCH modes.
6) Check that in PLAY mode. the tape runs as shown in Fig. 4-3-7.
7) Load a tape (NTSC:T-160, PAL: E-240) and play it back. carry out the checks described in steps 3) to 5) above.

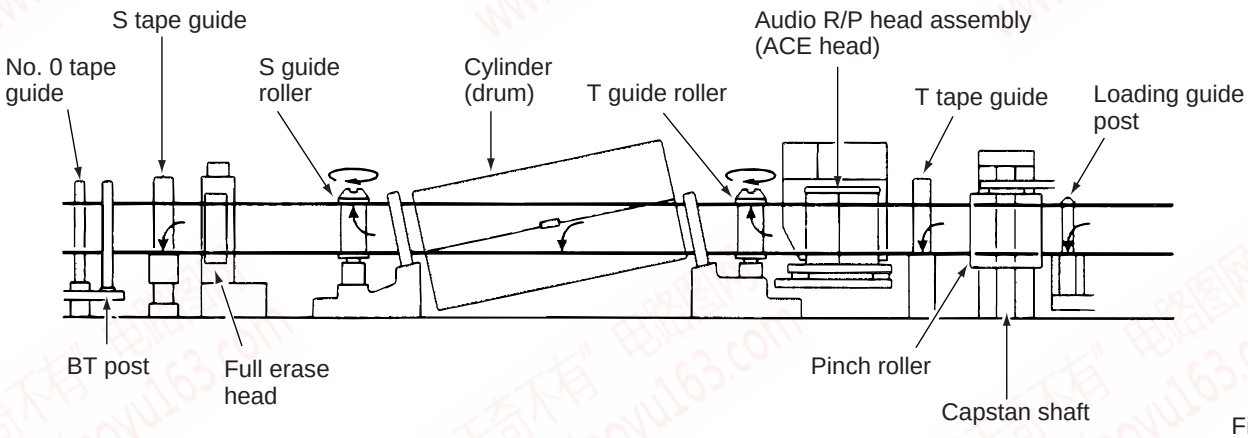

Fig. 4-3-7

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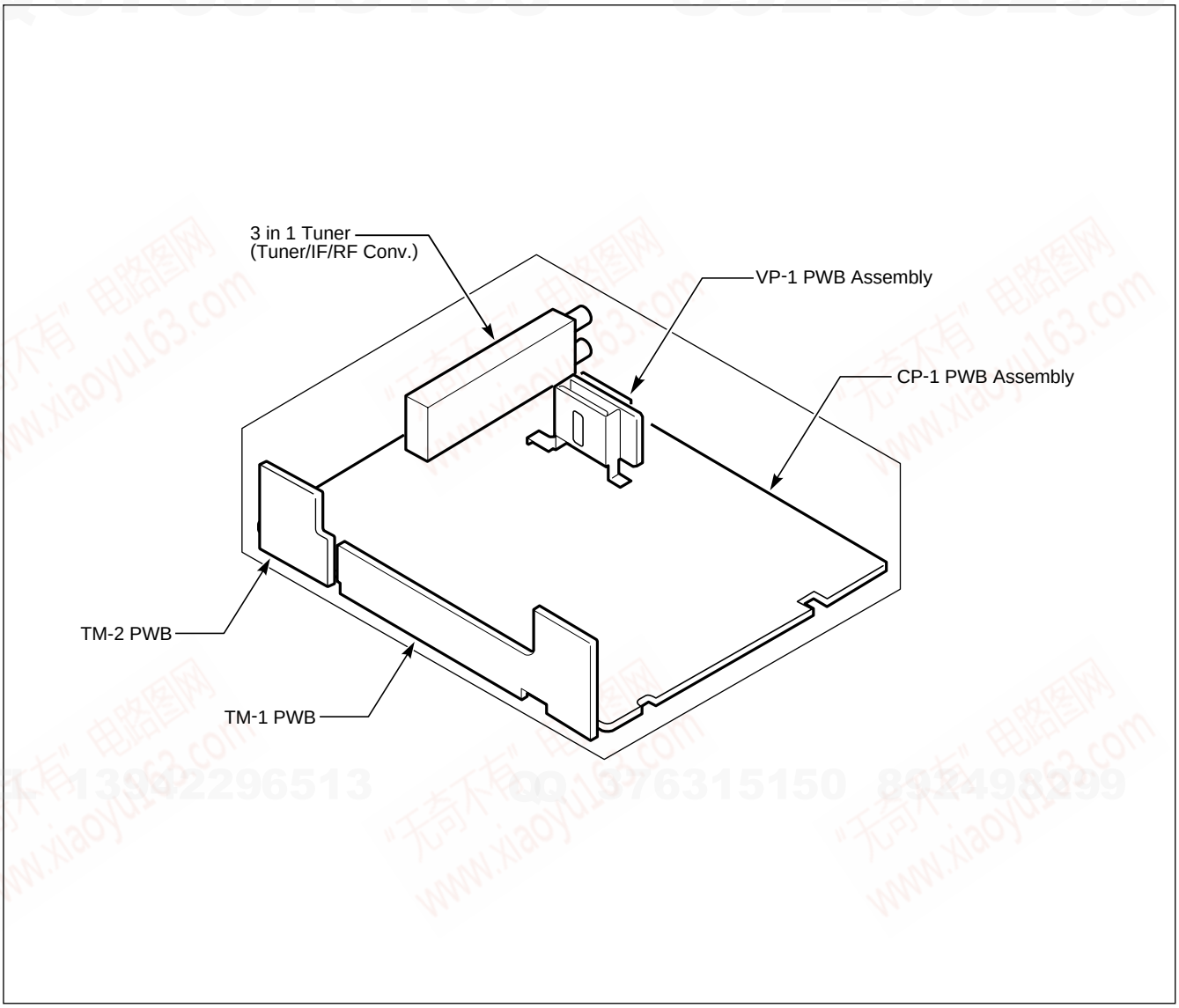
SECTION 6
ELECTRICAL ADJUSTMENTS

CIRCUIT BOARDS LOCATION



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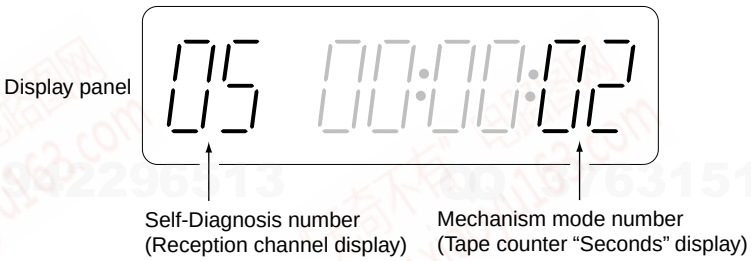
SELF-DIAGNOSIS DISPLAY

Mechanism Mode Display / Head Output Drop Warning Display / Cylinder Rotation Accumulated Time Display

This unit displays the diagnosis contents of abnormalities and the mechanism, mode on its display panel in 2-digit numbers. When the head playback output has dropped, the " L" sign will be blinked. Some models (listed later) will also display the cylinder rotation accumulated time.
These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contents and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self- diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 10 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number and the cylinder accumulated rotation time display described later (some models only) will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.
- When the "0" button on the remote control unit is pressed during display, and clearing the self-diagnosis display and mechanism mode display.



Self-Diagnosis Contents

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty .	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape loading mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.

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No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette drive mechanism is faulty . • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. • When the power switch is turned on before eject operations: Shifts to the STOP mode. • When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette drive mechanism. • The main cam and front rack gear of the front loading mechanism have not engaged properly. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1(REVIEW) while moving from 2 (IDLER), 3 (STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3(STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.
10	The capstan motor does not rotate and cassette tape eject when cassette tape insert.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STANDBY mode. Protect cassette tape.
11	The cylinder motor does not rotate and cassette tape eject when cassette tape insert.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty.	Shifts to the STANDBY mode. Protect cassette tape.

Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual.
These manual reference numbers are shown in the cover.

Mechanism Mode Display Contents

Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	08	PLAY	16	VIDEO INSERT
01	STANDBY	09	REC	17	VIDEO INSERT – PAUSE
02	STOP	10	AUDIO DUBBING	18	AUDIO/VIDEO INSERT
03	STILL	11	X2 SPEED PLAY	19	REVERSE X2 SPEED PLAY
04	REC-PAUSE	12	CUE		
05	AUDIO DUBBING – PAUSE	13	REVIEW		
06	FRAME ADVANCE	14	FAST FORWARD		
07	SLOW	15	REWIND	99	OTHERS

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2. ELECTRICAL ADJUSTMENT

VCR PRESETTING

This VCR need three basic presetting by using the menus displayed on-screen. After all connection have been made, then follow steps 1 to 3 to preset the VCR.
The three presetting steps will be displayed in sequence on TV screen. The setting are entered with the remote control.

Turn on the VCR

1. Adjusting the TV receiver to the video channel: The AUTO SETUP screen will appear. When the video channel has been preset, press the OK button on the remote control.
2. Country selection: Using the numeric button, select the country of use.
3. Language selection: When the desired language has been select, press the MENU / TV button directly before prevent auto tuning will start.

When steps 1 to 3 have been finish, ready to operate the all operating mode.

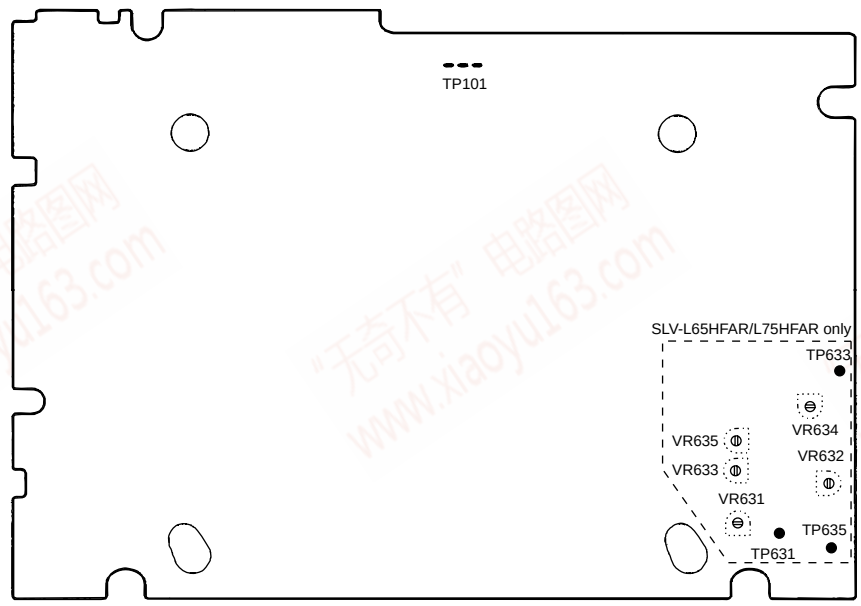
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, “switching position adj.”
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will daviate the tracking center set, be sure to press the channel buttons (▲) or (▼) once directly after starting playback to prevent auto-tracking from being set.

Oscilloscope	Vertical sensitivity	: 5 mV/DIV, external trigger
	Bandwidth	: more than 10 MHz
Alignment Tape	KRV-51P (8-192-605-36)	: SP mode, monoscope. 400 Hz
Blank Tape	VHS-type cassette tape	
Monitor TV		

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-1-1

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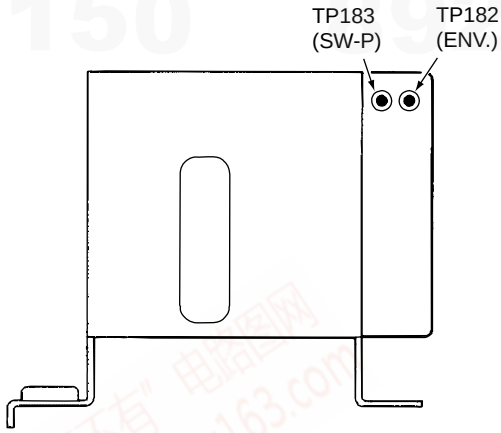

VP-1 PWB Assembly

Fig. 2-1-2

Note:

- Set the REC/PLAY SPEED button to indicator panel in the SP mode.
- Self-recording means “Record any broadcasting or video signal and playback the just-recorded portion.”

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (RF SW-P)	Oscilloscope	PLAY (SP) mode Alignment tape (KRV-51P)

Adj. Location	Adj. Value
REC button CHANNEL (▲/▼) button PLAY button	6.5 H ± 0.5 H

1. At playback starts, press the REC button 3 times within 3 seconds after the playback picture comes out. However, these 3-push must be done within 2 seconds, and last push must be kept pressed for 0.5 seconds. (Fig. 2-1-3)
2. "P 0:00" is appeared in FLD, and it becomes the adjustment mode. This indication value changes automatically, and 6.5H adjustment is done. When this value stops, adjustment value almost becomes 6.5H.
3. Observe the video output signal by the oscilloscope, triggered by the fall down point of RF SW PULSE (TP183), and confirm that a front edge of V-SYNC is delayed for 6.5 H ± 0.5 H from the fall down point of RF SW PULSE. (Fig. 2-1-4)
4. After the adjustment data is fixed (it should be within 15 seconds from the adjustment mode start), press the PLAY button more than 1 second. Then the indication changes to "P – : – ", it writes the data (delay quantity) to theE^2PROM. (If it passes through 15 seconds before pushing the PLAY button, the intake of the data isn't done, and it finishes the adjustment mode.)
5. If it is not in 6.5 H ± 0.5 at the time of the confirmation by the above 3., make manual fine adjustment by pressing the CHANNEL button, and do the operation of 4.

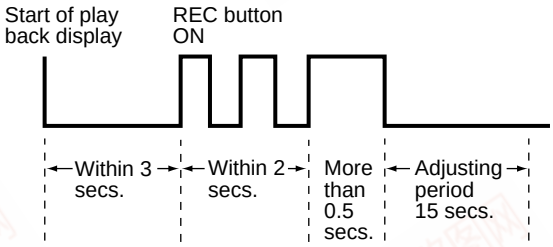

Fig. 2-1-3

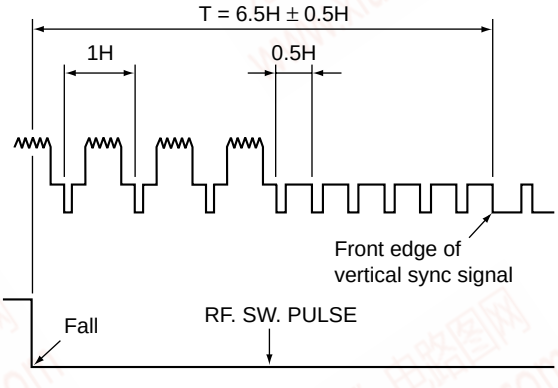

Fig. 2-1-4

2-1-4. SP STIL V-LOCK ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor	Monoscope pattern	Self-recording (SP mode) STILL mode

Adj. Location	Adj. Value
CHANNEL (▲) or (▼) button	The minimum vertical shake

1. Set the REC/PLAY SPEED button to the SP model.
2. Play back the own recorded portion of the tape and then set the VCR in the STILL mode.
3. Press the CHANNEL (▲) or (▼) button so that the vertical shake of picture becomes its minimum.

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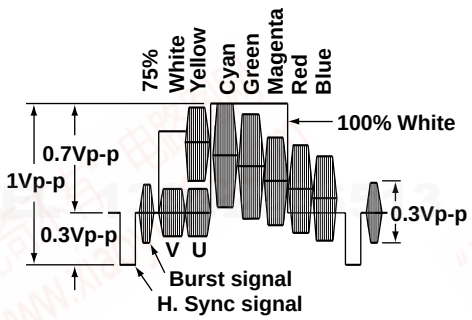
2-2. VIDEO CIRCUIT RELAY JIG

2-2-1 .TEST EQUIPMENT AND STANDARDS REQUIRED

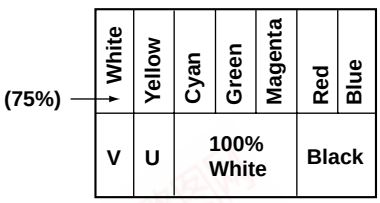
Color Bar Signal Generator	PAL Color bar signal with 100% white level (EBU color bar signal)	
Oscilloscope	Vertical sensitivity Bandwidth	: 5 mV/DIV, external trigger : more than 10 MHz
Oscilloscope Probe	Input capacity Covering frequency	: less than 25 pF (10:1) less than 40 pF (1:1) : DC ~ 40 MHz (10:1) DC ~30 MHz (1:1)
Digital Voltmeter	DC range	
Alignment Tape	KRV-51P (8-192-605-36) (Color bar signal waveform is described below. Refer to Fig. 2-2-1)	: SP mode, color bar, 400 Hz
Relay Jig	J-6090-036-A J-6090-019-A	: 7-wire flat cable for VP-1 PWB assembly (SLV-L45AR) : 12-wire flat cable for VP-1 PWB assembly (SLV-L65HFAR/L75HFAR)

ALIGNMENT TAPE COLOR BAR SIGNAL



Color bar signal waveform (KRV-51P)

Fig. 2-2-1



Color bar pattern (KRV-51P) on monitor TV

Fig. 2-2-2

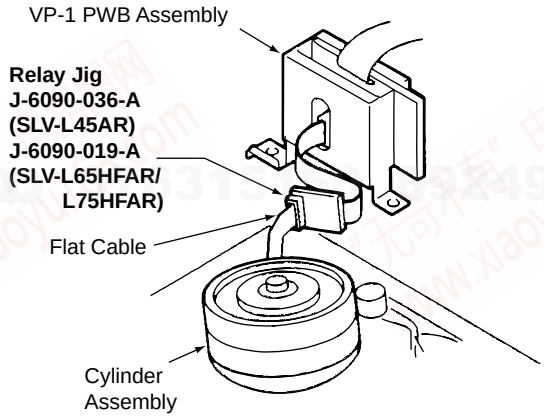


Fig. 2-2-3

RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing of the VP-1 PWB assembly, as shown in Fig. 2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

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SLV-L65HFAR/L75HFAR only

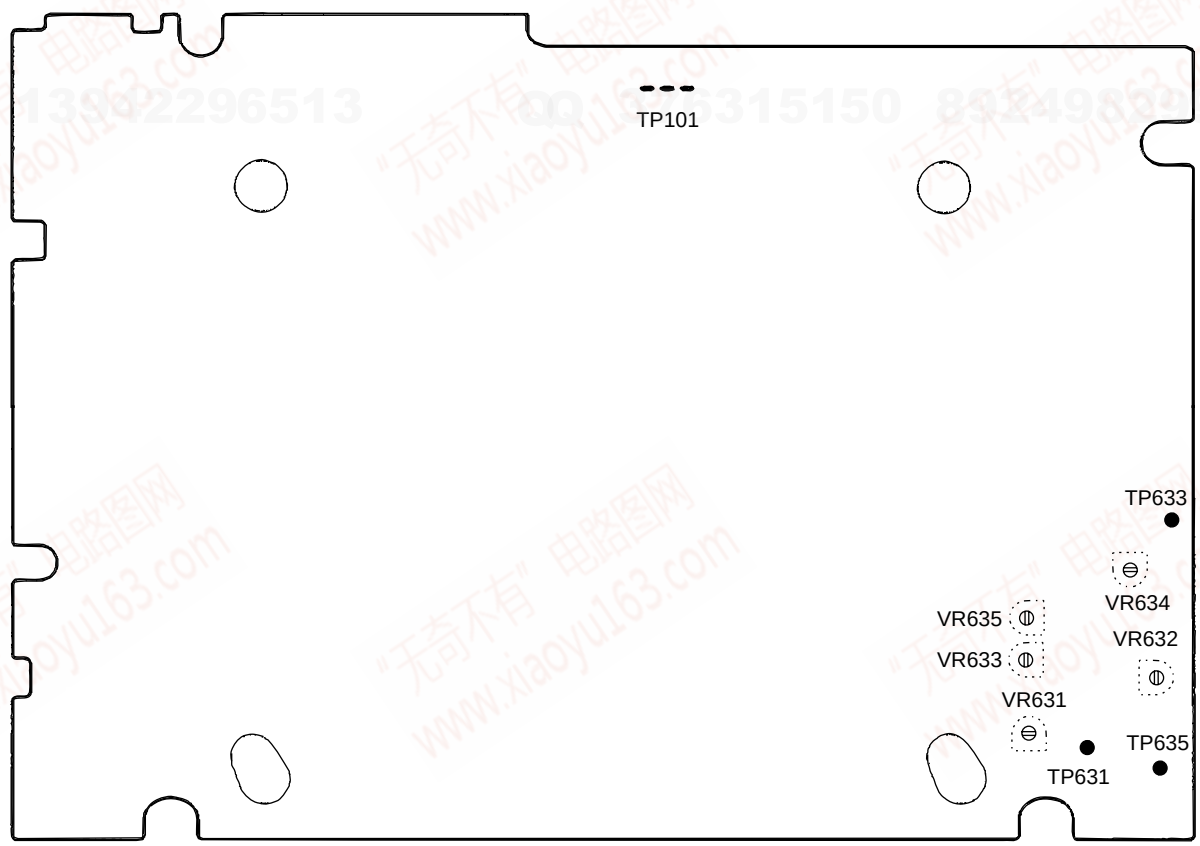
2-3. MTS DECODER CIRCUIT ADJUSTMENT

- If adjusting the MTS Decoder Circuit, special equipment shown in section 2-2-1. is necessary.
- Improper adjustment will cause loss of performance of stereo sound and bilingual sound detection.
- Prior to making these adjustments, the other adjustments except the MTS Decoder should be completed.

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

TV Multichannel Sound Generator	LMS-238 (Produsedby Leader Electonics Corp.)
Oscilloscope	
Standard Audio Signal Generator (SG)	
Frequency Counter	Input frequency : 20 Hz ~ 10MHz
AC Voltmeter	
DC Voltmeter	
DC Power Supply Unit	Voltage : 0 ~ 15 V (DC)
Band Path Filter	200 Hz ~ 15 kHz

2-3-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-3-1

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Notes:
- Set the INPUT switch on the remote control to TUNER.
- Set the VIF/RF OUTPUT switch on the TV Multichannel Sound Generator to CH-3 or CH-4. And LEVEL volume control to push (locked the RF output level).

2-3-3. STEREO/SAP FILTER ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP633	Standard audio signal generator (SG) Oscilloscope Frequency counter DC power supply unit	Disconnected Power cord of VCR

Adj. Location	Adj. Value
VR633 (ST.DBX FIL)	Minimum level (Less than 10 mVp-p)

1. Temporary disconnect the power cord of the VCR to set the power OFF.
2. Apply 5V(DC) to TP630 from the DC power supply unit.
3. Connect the standard audio signal generator and frequency counter to TP631, and input 22.9 kHz ± 50 Hz, –10 ± 1 dBM sine wave.
4. After confirming TP633 output on the oscilloscope, adjust VR633 (ST. DBX FIL) so that the output is brought to its minimum level (less than 10 mVp-p).

2-3-4. STEREO VCO ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP635	TV multichannel sound generator DC voltmeter	E-E mode

Adj. Location	Adj. Value
VR635 (VCO)	–

1. Input the output signal of the TV multichannel sound generator into the VCR ANT input terminal.
2. Set the TV multichannel sound generator as follows. SAP switch : OFF, INT FREQ switch : 300 Hz, STEREO switch : L + R, VIF/RF OUTPUT : CH-3 or CH-4.
3. Receive the signal of TV multichannel sound generator. and confirm so that the " L + R " within the monitor TV when PILOT switch to ON.
4. Set OFF the pilot switch of the TV multichannel sound generator, then measure the DC output voltage of TP635 and write the value down.
5. Set ON the pilot switch and confirm that " ST " within the indicator panel lights. If not, adjust VR635 (VCO) until " ST " lights.
6. Measure the output voltage of TP635, and adjust VR635 (VCO) so that the output voltage agree with the value (within ± 0.03 V) measured in step 3.

2-3-5. INPUT LEVEL ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP631	TV multichannel sound generator Standard audio signal generator AC voltmeter	E-E mode

Adj. Location	Adj. Value
VR631 (INPUT LEVEL)	100 ± 5 mVrms

1. Input the output signal of the TV multichannel sound generator into the VCR ANT input terminal.
2. Set the TV multichannel sound generator as follows. SAP switch : OFF, EXT (MONO) switch : ON.
3. Input 300 ± 50 Hz sine wave into the EXT INPUT terminal of the TV multichannel sound generator from the standard audio signal generator.
4. Connect the AC voltmeter to the EXT INPUT terminal, and adjust the output level of the standard audio signal generator so that the input voltage becomes 343.7 ± 1 mVrms (terminated at 600Ω).
5. Adjust the VR631 (INPUT LEVEL) so that the AC voltmeter connected to TP631 becomes 100 ± 5mVrms.

2-3-6. SEPARATION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
CH : 1 AUDIO OUTPUT terminal (L) CH : 2 AUDIO OUTPUT terminal (R)	TV multichannel sound generator Oscilloscope Band path filter (200 Hz ~ 15kHz)	E-E mode

Adj. Location	Adj. Value
VR632 (SEP. LOW) VR634 (SEP. HIGHT)	Minimum level (less than 15mVp-p)

1. Input the output signal of the TV multichannel sound generator into the VCR ANT input terminal.
2. Connect the oscilloscope to the AUDIO OUTPUT terminal (L) and (R) of the VCR via the BPF.
3. Set the TV multichannel sound generator as follows. SAP switch : OFF, PILOT switch : ON.
4. Receive the signal of TV multichannel sound generator, and confirm so that the " L + R " within the monitor TV when PILOT switch to ON.
5. Set the TV multichannel sound generator (STEREO switch : Rch, INT FREQ switch : 3 kHz), and adjust VR632 (SEP. LOW) so that the output of the AUDIO OUTPUT terminal (L) is brought to its minimum level (less than 15 mVp-p) during Rch modulation.
6. Set the TV multichannel sound generator (STEREO switch : Lch, INT FREQ switch : 300 Hz), and adjust VR634 (SEP. HIGH) so that the output of the AUDIO OUTPUT terminal (R) is brought to its minimum level (less than 15 mVp-p) during Lch modulation.

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7. Set the TV multichannel sound generator (STEREO switch : Lch, INT FREQ switch : 3 kHz), and confirm that the difference between the AUDIO OUTPUT terminal (L) and (R) is more than 25 dB.
8. Set the TV multichannel sound generator (STEREO switch : Rch, INT FREQ switch : 300 Hz), and confirm that the difference between the AUDIO OUTPUT terminal (L) and (R) is more than 20 dB. If not, repeat steps 5 to 8.

Note : Measurement of steps 5 through 8, be sure to connect the BPF between oscilloscope and AUDIO OUTPUT terminals.

2-3-7. AUDIO OUTPUT MODE AND OUTPUT SIGNAL CHECK

Measuring Point	Measuring Equipment	Adj. Condition
CH : 1 AUDIO OUTPUT terminal (L) CH : 2 AUDIO OUTPUT terminal (R)	TV multichannel sound generator Oscilloscope	E-E mode
Adj. Location		**Adj. Value**
–		–

1. Input the output signal of the TV multichannel sound generator into VCR ANT input terminal. Set the TV multichannel sound generator (INT FREQ switch : 300 Hz, STEREO switch : L + R, SAP switch : ON, PILOT switch : ON).
2. Receive the signal of TV multichannel sound generator, and confirm so that the " L + R " within the monitor TV when PILOT switch to ON.
3. Confirm " ST " and " SAP " within the VCR indicator panel lights.
4. Confirm the waveform of the AUDIO OUTPUT terminal (L) and (R) on the oscilloscope.
5. Set the TV multichannel sound generator as follows.
   PILOT switch : ON, STEREO switch : Lch.
6. Press the VCR PROGRAM button to set ON-SCREEN MENU, and select the VCR SETUP menu.
7. Confirm that the waveforms of the AUDIO OUTPUT terminal (L) and (R) become " No. 1 to 3 " in the table below when selecting the MTS mode on the next screen, " MONO " → " STEREO " → " SAP " sequentially.
8. Set the TV multichannel sound generator (EXT terminal : no input, EXT (MONO) switch : ON).
9. Confirm that the waveforms of the AUDIO OUTPUT terminal (L) and (R) become " No.4 " in the table below when selecting the VCR SETUP menu then setting the MTS mode to " SAP ".

No.	Mode of VCR (Indicator Panel)	AUDIO OUTPUT Lch	AUDIO OUTPUT Rch
1	STEREO (" ST " indicator lights)	300Hz sine wave approx. 240 mVp-p	300Hz sine wave approx. 15 mVp-p
2	MONO (NO indicators)	300Hz sine wave approx. 120 mVp-p	300Hz sine wave approx. 120 mVp-p
3	SAP (" SAP " indicator lights)	300Hz sine wave approx. 120 mVp-p	300Hz sine wave approx. 180 mVp-p
4	SAP (" SAP " indicator lights)	–	300Hz sine wave approx. 180 mVp-p

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2-4. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.
- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

Note: The 3 in tuner dose not need any adjustments, because precise adjustments were down before shipment.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT

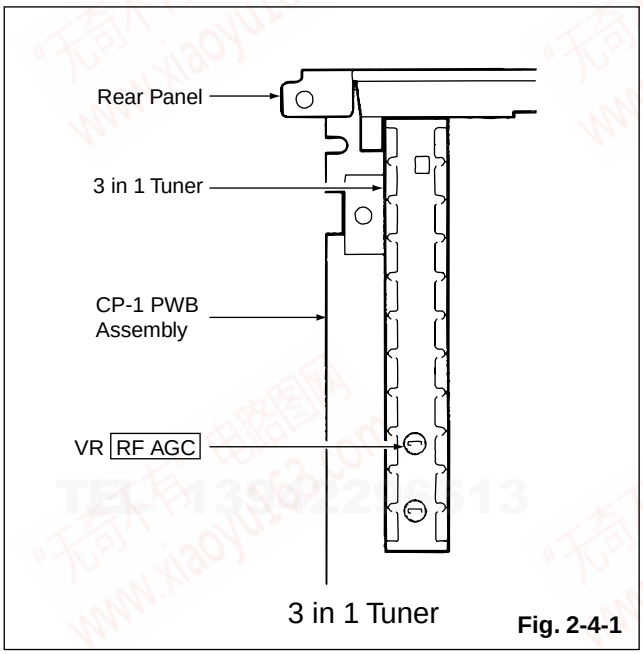

Fig. 2-4-1

2-4-3. RF AGC ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode
Adj. Location	**Adj. Value**	
VR (RF AGC) (on the 3 in 1 tuner)	S/N is best point	

1. Connect the monitor TV to the VHF/UHF antenna output terminal.
2. Connect the VHF or UHF antenna to the VHF/UHF antenna input terminal.
3. Receive the middle electrical field (70 dBμ ~90 dBμ) of the VHF or UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.
For adjustment, refer to the separate volume " V95 I Mechanism Manual " (MM531433) and " V95 II Mechanism Manual " (MS531500).

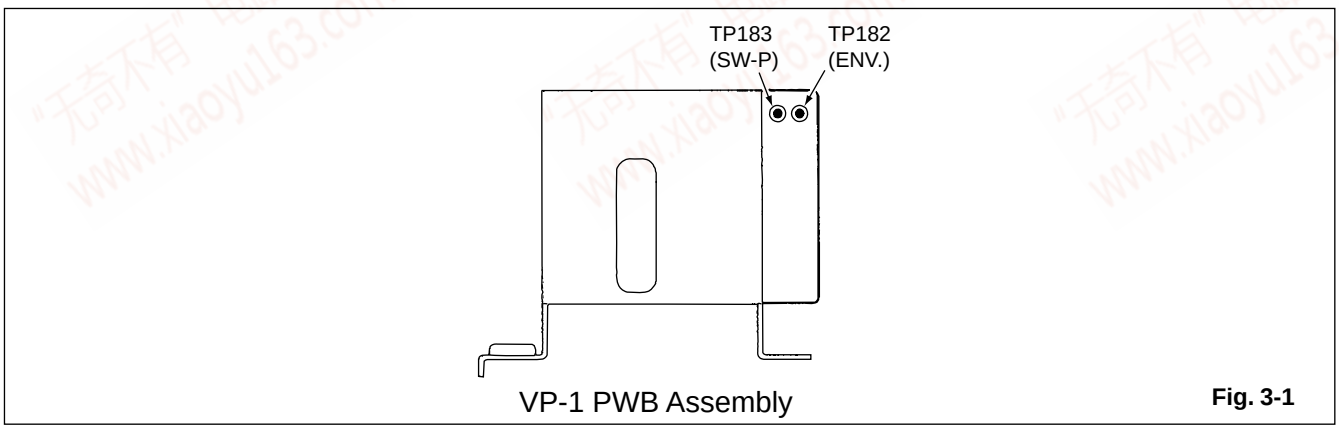

Fig. 3-1

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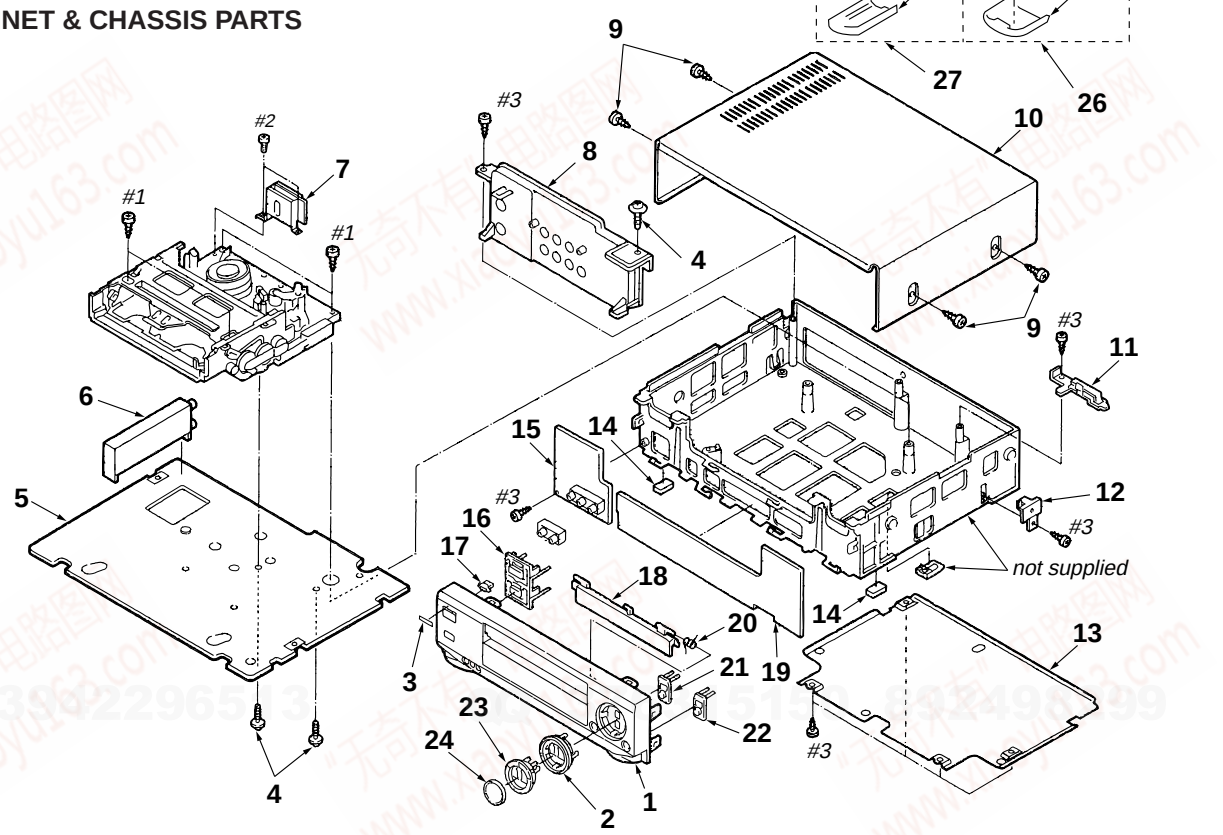
SECTION 7
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- The parts marked with a ◊ are special parts for Argentina and are supplied by SONY ARGENTINA.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The CP-A board and CP-1 board are identical.

7-1.CABINET & CHASSIS PARTS



Ref. No.		Part No.	Description	Remark
* 1	◊	A-6788-321-A	CABINET ASSY, FRONT (L75HFAR)	
* 1	◊	A-6788-328-A	CABINET ASSY, FRONT (L65HFAR)	
* 1	◊	A-6788-331-A	CABINET ASSY, FRONT (L45AR)	
2	◊	3-051-096-01	BUTTON (BASE)	
3		3-942-768-02	EMBLEM (NO.5), SONY	
4		3-965-446-01	SCREW, SPECIAL	
* 5	◊	A-6794-549-A	CP-A BOARD, COMPLETE (L75HFAR)	
* 5	◊	A-6794-557-A	CP-A BOARD, COMPLETE (L65HFAR)	
* 5	◊	A-6794-564-A	CP-A BOARD, COMPLETE (L45AR)	
6		1-693-424-11	TUNER (RF/TU/IF)	
* 7	◊	A-6794-554-A	VP-1 BOARD, COMPLETE (L65HFAR,L75HFAR)	
* 7	◊	A-6794-567-A	VP-1 BOARD, COMPLETE (L45AR)	
* 8		3-970-792-01	BRACKET, TERMINAL (L45AR)	
* 8		3-976-269-01	BRACKET, TERMINAL (L65HFAR,L75HFAR)	
9		3-740-382-01	+BTS-B S 4X12	
10		3-051-087-01	COVER, TOP (L75HFAR)	
10		3-051-290-01	COVER, TOP (L45AR)	
* 10		3-976-260-01	COVER, TOP (L65HFAR)	
11		3-963-641-01	HOLDER (AC INLET)	
* 12		3-963-642-01	TOP HOLDER COVER	
* 13		3-963-620-01	COVER, BOTTOM	
14		3-942-661-01	STAND, FELT	
* 15	◊	A-6794-547-A	TM-2 BOARD, COMPLETE (L75HFAR)	
* 15	◊	A-6794-561-A	TM-2 BOARD, COMPLETE (L65HFAR)	
* 15	◊	A-6794-569-A	TM-2 BOARD, COMPLETE (L45AR)	
16	◊	3-051-090-01	BUTTON (2P) (L75HFAR)	
16	◊	3-051-293-01	BUTTON (POWER.EJECT) (L45AR)	

Ref. No.		Part No.	Description	Remark
16		3-974-743-01	BUTTON 2P (POWER EJECT) (L65HFAR)	
17		3-947-433-01	WINDOW	
18	◊	3-051-089-01	DOOR, CASSETTE (L75HFAR)	
18	◊	3-051-287-01	DOOR, CASSETTE (L65HFAR)	
18	◊	3-051-292-01	DOOR, CASSETTE (L45AR)	
* 19	◊	A-6794-546-A	TM-1 BOARD, COMPLETE (L75HFAR)	
* 19	◊	A-6794-560-A	TM-1 BOARD, COMPLETE (L65HFAR)	
* 19	◊	A-6794-568-A	TM-1 BOARD, COMPLETE (L45AR)	
20		3-960-936-01	SPRING	
21	◊	3-051-091-01	BUTTON (PAUSE) (L75HFAR)	
21	◊	3-051-294-01	BUTTON (PAUSE) (L45AR)	
21		3-974-744-01	BUTTON (PAUSE) (L65HFAR)	
22	◊	3-051-092-01	BUTTON (REC) (L75HFAR)	
22	◊	3-051-295-01	BUTTON (REC) (L45AR)	
22		3-974-745-01	BUTTON (REC) (L65HFAR)	
23	◊	3-051-095-01	BUTTON (FF.REW) (L75HFAR)	
23	◊	3-051-298-01	BUTTON (FF.REW) (L45AR)	
23	◊	3-974-749-01	BUTTON (FF.REW) (L65HFAR)	
24	◊	3-051-094-01	BUTTON (PLAY.STOP) (L75HFAR)	
24	◊	3-974-748-01	BUTTON (PLAY.STOP) (L65HFAR)	
24	◊	3-051-297-01	BUTTON (PLAY.STOP) (L45AR)	
25		3-709-128-01	COVER, BATTERY (L45AR,L65HFAR)	
26		1-475-752-11	COMMANDER, STANDARD (RMT-V241) (L75HFAR)	
27		1-475-753-11	COMMANDER, STANDARD (RMT-V242) (L45AR,L65HFAR)	
28		3-709-395-01	COVER (V241) (L75HFAR)	

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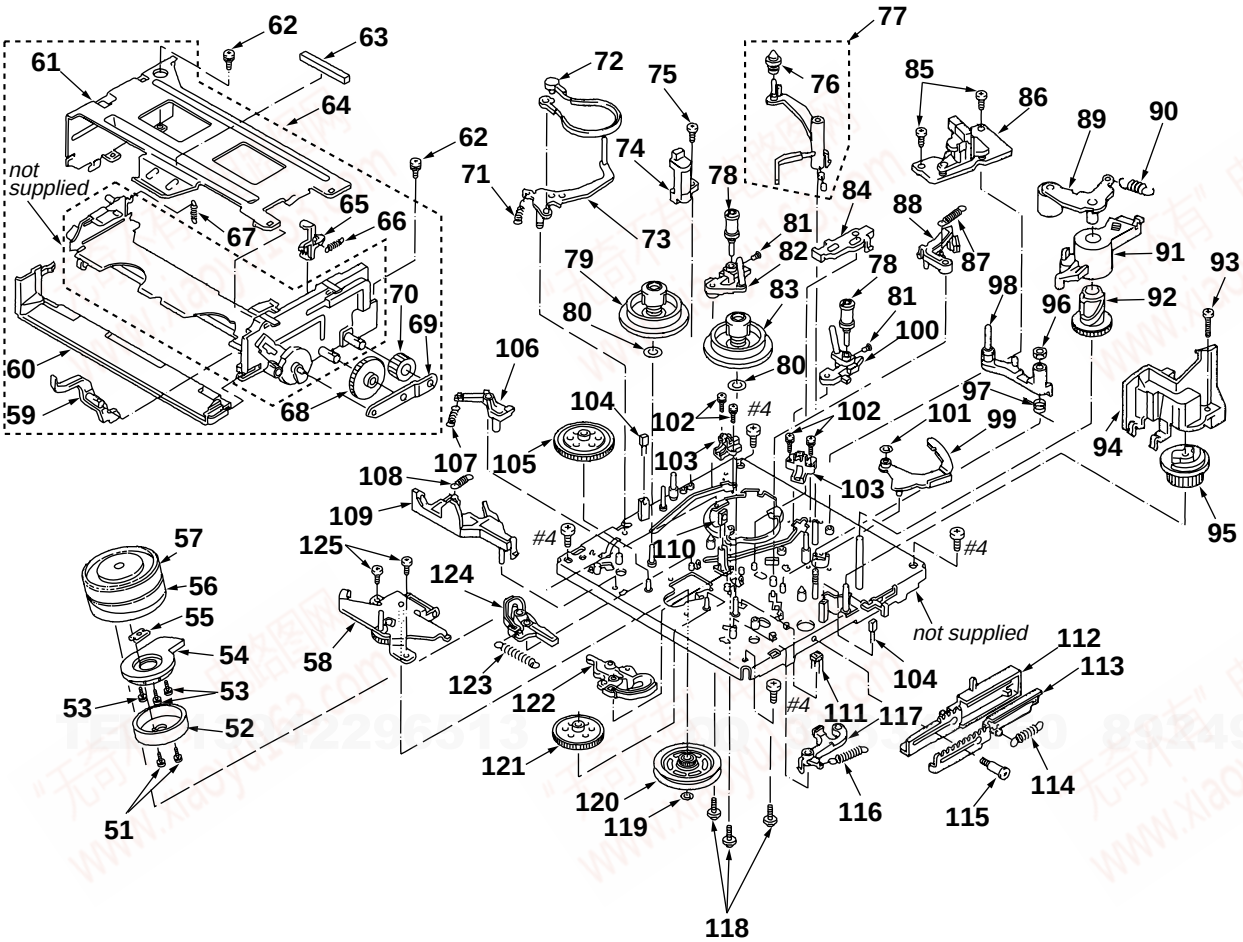
7-2.MECHANISM PARTS-1



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Ref. No.	Part No.	Description	Remark
51	3-746-760-01	SCREW (2.3X6), SPECIAL	
52	1-698-912-11	MOTOR, ROTOR CYL DC 2W	
53	3-746-761-01	SCREW (2.3X10), SPECIAL	
54	1-698-913-11	MOTOR, STATOR CYL DC 2W	
55	3-735-738-01	SPACER, MOTOR	
56	3-966-785-01	CYLINDER LWR (L45AR)	
56	3-976-272-01	CYLINDER LWR (L65HFAR/L75HFAR)	
57	3-966-786-01	CYLINDER UPR (L45AR)	
57	3-976-273-01	CYLINDER UPR (L65HFAR/L75HFAR)	
58	A-8316-756-A	CLUTCH MOUNT BOARD, COMPLETE	
59	3-960-915-01	LEVER, DOOR OPENER	
60	3-960-954-01	FRAME, UNDER	
* 61	3-960-952-01	STAND (L)	
62	3-960-939-01	SCREW (2.6X6), SPECIAL	
63	3-965-758-01	PAD	
* 64	A-6779-276-A	MECHANICAL ASSY, CASSETTE	
65	3-961-302-01	LEVER, RELEASE	
66	3-961-301-01	SPRING, LID OPENER	
67	3-961-303-01	SPRING, LOCK TRAY	
68	3-960-959-01	GEAR, LOCK	
* 69	3-960-916-01	HOLDER, GEAR	
70	3-960-960-01	GEAR, PINION	
71	3-960-977-01	SPRING, BT	
72	3-963-789-01	BAND (ASSY), BRAKE	
73	3-961-016-01	LEVER ASSY, BT	
74	3-971-997-01	HEAD, FULL ERASE	
75	3-960-984-01	SCREW (2.6X10), SPECIAL	
76	3-977-067-01	CLEANER (ASSY)	
77	A-6779-889-A	LEVER ASSY BOARD, COMPLETE	
78	3-735-630-01	ROLLER ASSY, GUIDE	
79	3-978-528-01	REEL (ASSY), SUPPLY	
80	3-735-754-01	WASHER (DIA.3), ADJUSTMENT	
81	3-961-038-01	SCREW (2X3), SPECIAL	
* 82	3-970-883-01	MOUNT (ASSY), S INC LINE	
83	3-963-782-01	REEL (ASSY), TAKE UP	
84	3-961-008-01	SLIDE, T ACT BRAKE	
85	3-966-763-01	SCREW (2.6X12)	
86	A-6779-797-A	HEAD ASSY, R/P ACE	

Ref. No.	Part No.	Description	Remark
87	3-961-015-01	SPRING, CAPSTAN BRAKE	
88	3-961-014-01	BRAKE ASSY, CAPSTAN	
89	3-961-024-01	LEVER ASSY, PINCH ROLLER	
90	3-961-026-01	SPRING, PINCH ROLLER	
91	3-973-490-01	MOUNT, LIFT PINCH	
92	3-961-027-01	CAM, LIFT PINCH	
93	3-961-030-01	SCREW (2.6X16), SPECIAL	
94	3-961-029-01	OPENER MOUNT	
95	3-961-028-01	GEAR, CAM PINCH	
96	3-961-045-01	NUT (3X3), SPECIAL	
97	3-961-044-01	SPRING, L GUIDE LEVER	
98	3-966-764-01	LEVER ASSY, ROAD	
99	3-964-886-01	LEVER (ASSY), ACT L GUIDE	
* 100	3-970-884-01	MOUNT (ASSY), T INC LINE	
101	3-740-367-01	WASHER, SLIT	
102	3-960-951-01	SCREW (2.6X10), SPECIAL	
103	3-970-880-01	CATCHER	
104	1-810-691-11	PHOTO DIODE PN263L-NC	
105	3-960-927-01	GEAR, S REEL	
106	3-961-002-01	LEVER, S SOFT	
107	3-961-003-01	SPRING, S SOFT	
108	3-961-023-01	SPRING, EP SWITCH	
109	3-961-022-01	LEVER, EP SWITCH	
110	1-810-690-11	LED LN59L	
111	1-801-326-11	PHOTO COUPLER SG-105F	
112	3-961-305-01	GEAR, FRONT RACK	
113	3-961-306-01	GEAR, START RACK	
114	3-961-307-01	SPRING, FRONT RACK	
115	3-961-021-01	SCREW (2.6X6), SPECIAL	
116	3-961-001-01	SPRING, T SOFT	
117	3-963-784-01	BRAKE (ASSY), SOFT	
118	3-191-422-01	SCREW (2.6X5.5), SPECIAL	
119	3-948-603-01	WASHER, SPECIAL	
120	3-960-926-01	PULLEY, REEL	
121	3-960-928-01	GEAR, T REEL	
122	3-963-786-01	BRAKE (ASSY), T	
123	3-966-765-01	SPRING, BRAKE	
124	3-963-785-01	BRAKE (ASSY), S	
125	3-960-925-01	SCREW (2.6X4), SPECIAL	

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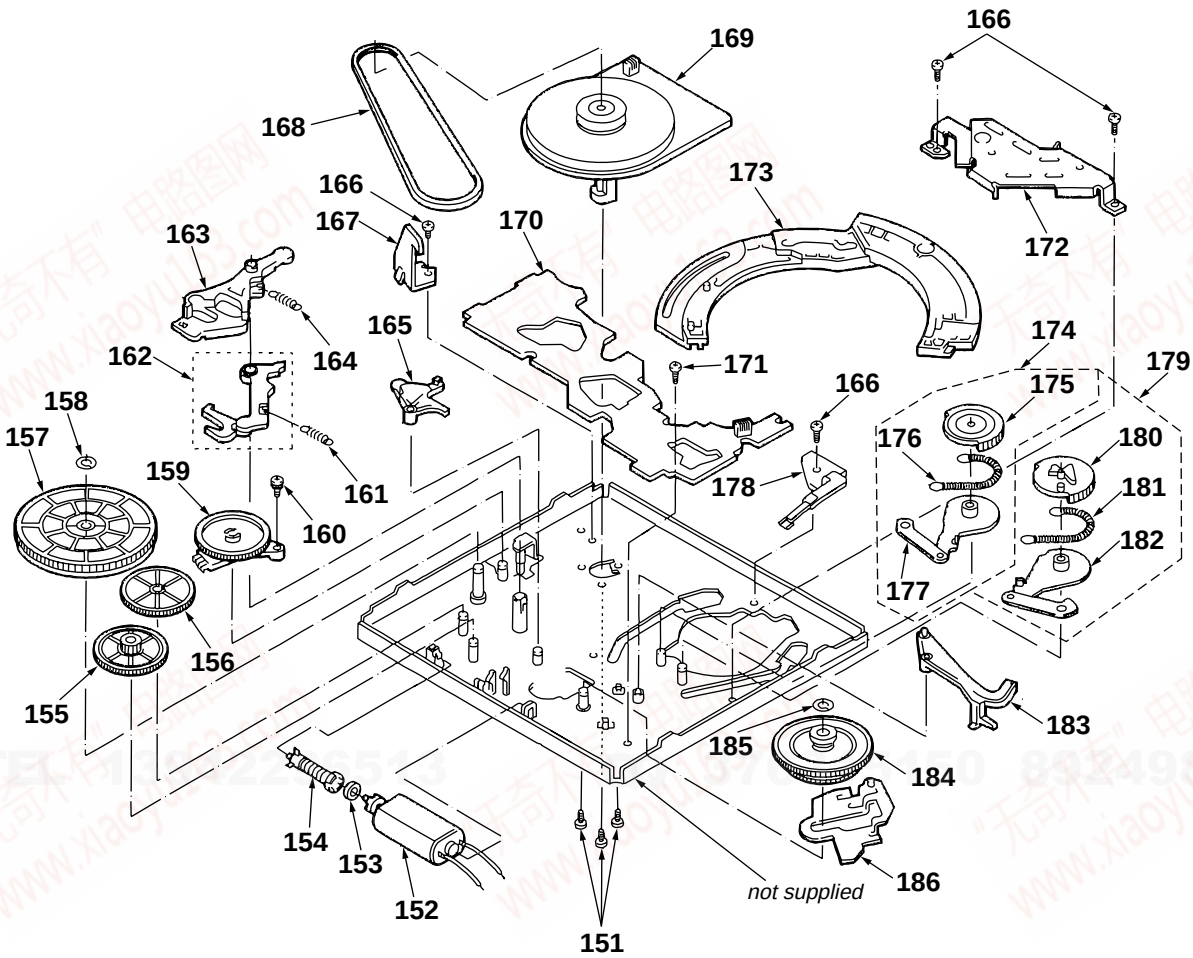
7-3.MECHANISM PARTS-2



Ref. No.	Part No.	Description	Remark
151	3-961-032-01	SCREW (2.6X6), SPECIAL	
152	3-961-047-01	MOTOR ASSY, LOADING	
153	3-961-049-01	DAMPER	
154	3-961-048-01	GEAR (COMPL), WORM	
155	3-961-050-01	GEAR (1), WHEEL	
156	3-963-793-01	GEAR (2), WHEEL	
157	3-963-794-01	CAM, MAIN	
158	3-973-491-01	WASHER (3.6X0.5), SPECIAL	
159	3-963-780-01	SWITCH (P-IT), MODE	
160	3-961-034-01	SCREW (2.6X8), SPECIAL	
161	3-961-011-01	SPRING, BRAKE RETURN	
162	3-963-788-01	BAR (ASSY), ACT BRAKE LEVER	
163	3-963-787-01	LEVER, CONTROL BRAKE	
164	3-961-013-01	SPRING, CLUTCH CHANGE	
165	3-961-012-01	LEVER, CLUTCH CHANGE	
166	3-960-921-01	SCREW (2.6X6), SPECIAL	
167	3-974-757-01	RETAINER, CAPSTAN	

Ref. No.	Part No.	Description	Remark
168	3-960-929-01	BELT, REEL	
169	1-763-142-11	MOTOR, CAPSTAN DC3W	
* 170	A-6796-534-A	MC-1 BOARD, COMPLETE	
171	3-960-925-01	SCREW (2.6X4), SPECIAL	
172	3-963-796-01	MOUNT, CRESCENT	
* 173	3-963-795-01	SLIDE, CRESCENT	
174	A-6779-673-A	GEAR ASSY, T ROAD BOARD, COMPLETE	
175	3-960-998-01	GEAR, T ROAD	
176	3-961-035-01	SPRING, T ROAD	
177	3-970-882-01	LEVER (ASSY), T ROAD	
178	3-970-879-01	GROUND (ASSY), CYL	
179	A-6779-672-A	GEAR ASSY, S ROAD BOARD, COMPLETE	
180	3-960-995-01	GEAR, S ROAD	
181	3-960-996-01	SPRING, S ROAD	
182	3-970-881-01	LEVER (ASSY), S ROAD	
183	3-960-982-01	LEVER ASSY, BT SPRING	
184	3-963-783-01	GEAR (ASSY), FRICTION	
185	3-735-755-01	WASHER (DIA.2.6)	
186	3-961-007-01	SLIDE, S ACT BRAKE	

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SECTION 8
ELECTRICAL PARTS LIST

CP-A

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ , for example :
  uA.... : µ A.... , uPA.... : µ PA....
  uPB.... : µ PB.... , uPC.... : µ PC....
  uPD.... : µ PD....
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- The parts marked with a ◊ are special parts for Argentina and are supplied by SONY ARGENTINA.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

The CP-A board and CP-1 board are identical.

Ref. No.	Part No.	Description			Remark
* ◊	A-6794-549-A	CP-A BOARD, COMPLETE (L75HFAR)			
* ◊	A-6794-557-A	CP-A BOARD, COMPLETE (L65HFAR)			
* ◊	A-6794-564-A	CP-A BOARD, COMPLETE (L45AR)			
		**********			
	1-533-583-11	HOLDER, FUSE			
		< CAPACITOR >			
C1001	1-126-301-11	ELECT	1uF	20%	50V
C1002	1-111-241-11	ELECT	10uF	20%	16V
C1003	1-126-154-11	ELECT	47uF	20%	6.3V
C1004	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1005	1-126-154-11	ELECT	47uF	20%	6.3V
C1006	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1007	1-126-301-11	ELECT	1uF	20%	50V
C1008	1-126-301-11	ELECT	1uF	20%	50V
C1009	1-126-301-11	ELECT	1uF	20%	50V
C1010	1-102-976-91	CERAMIC	180PF	5%	50V
C1011	1-162-288-31	CERAMIC	330PF	10%	50V
C1012	1-162-219-31	CERAMIC	68PF	5%	50V
C1013	1-124-638-11	ELECT	22uF	20%	10V
C1014	1-102-129-00	CERAMIC	10000PF	10%	50V
C1015	1-162-211-31	CERAMIC	33PF	5%	50V
C1016	1-102-129-00	CERAMIC	10000PF	10%	50V
C1017	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
C1018	1-130-490-11	MYLAR	0.039uF	5%	50V
C1019	1-126-301-11	ELECT	1uF	20%	50V
C1021	1-161-059-00	CERAMIC	0.047uF	10%	50V
C1022	1-126-301-11	ELECT	1uF	20%	50V
C1023	1-161-059-00	CERAMIC	0.047uF	10%	50V
C1024	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1025	1-102-129-00	CERAMIC	10000PF	10%	50V
C1026	1-126-301-11	ELECT	1uF	20%	50V
C1027	1-161-059-00	CERAMIC	0.047uF	10%	50V
C1028	1-126-301-11	ELECT	1uF	20%	50V
C1029	1-126-154-11	ELECT	47uF	20%	6.3V
C1030	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1031	1-102-129-00	CERAMIC	10000PF	10%	50V
C1032	1-126-301-11	ELECT	1uF	20%	50V
C1033	1-126-301-11	ELECT	1uF	20%	50V
C1037	1-126-301-11	ELECT	1uF	20%	50V
				(L45AR ,L75HFAR)	
C1040	1-111-241-11	ELECT	10uF	20%	16V
C1041	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C1042	1-162-209-31	CERAMIC	27PF	5%	50V
C1044	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1046	1-162-211-31	CERAMIC	33PF	5%	50V
C1049	1-162-203-31	CERAMIC	15PF	5%	50V
C1071	1-126-935-11	ELECT	470uF	20%	6.3V
C1072	1-126-154-11	ELECT	47uF	20%	6.3V
C1073	1-164-159-21	CERAMIC	0.1uF		50V
C1074	1-162-600-11	CERAMIC	0.0047uF	20%	16V
C1075	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1080	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1101	1-126-301-11	ELECT	1uF	20%	50V
C1102	1-126-154-11	ELECT	47uF	20%	6.3V
C1103	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1104	1-102-129-00	CERAMIC	10000PF	10%	50V
C1105	1-102-129-00	CERAMIC	10000PF	10%	50V
C1106	1-102-129-00	CERAMIC	10000PF	10%	50V
C1107	1-102-129-00	CERAMIC	10000PF	10%	50V
C1108	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1110	1-162-294-31	CERAMIC	0.001uF	10%	50V
C1112	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1113	1-162-209-11	CERAMIC	27PF		
C1114	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C2001	1-124-257-00	ELECT	2.2uF	20%	50V
C2002	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C2003	1-102-129-00	CERAMIC	10000PF	10%	50V
C2004	1-111-241-11	ELECT	10uF	20%	16V
C2005	1-124-259-11	ELECT	4.7uF	20%	50V
C2006	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C2007	1-124-259-11	ELECT	4.7uF	20%	50V
C2008	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C2009	1-124-259-11	ELECT	4.7uF	20%	50V
C2010	1-124-229-00	ELECT	33uF	20%	10V
C2011	1-124-638-11	ELECT	22uF	20%	10V
C2012	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C2013	1-102-128-00	CERAMIC	0.0082uF	10%	50V
C2014	1-111-241-11	ELECT	10uF	20%	16V
C2015	1-102-128-21	CERAMIC	0.0082uF	10%	50V
C2016	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(L45AR)
C2017	1-162-294-31	CERAMIC	0.001uF	10%	50V
C2018	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
					(L45AR)
C2021	1-164-087-11	CERAMIC	0.0015uF	10%	50V
C2022	1-162-293-31	CERAMIC	820PF	10%	50V

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CP-A

Ref. No.	Part No.	Description	Remark
C2023	1-161-049-00	CERAMIC 0.0068uF 10%	50V
C2024	1-162-305-11	CERAMIC 0.0068uF 20%	16V
C2025	1-124-589-11	ELECT 47uF 20%	16V
C2026	1-130-973-00	FILM 0.022uF 5%	100V
C2030	1-126-154-11	ELECT 47uF 20%	6.3V
C2031	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C2048	1-124-589-11	ELECT 47uF 20%	16V
C2072	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C2201	1-126-301-11	ELECT 1uF 20%	50V (L65HFAR,L75HFAR)
C2301	1-111-241-11	ELECT 10uF 20%	16V (L65HFAR,L75HFAR)
C2302	1-111-241-11	ELECT 10uF 20%	16V (L65HFAR,L75HFAR)
C2303	1-161-494-00	CERAMIC 0.022uF	25V (L65HFAR,L75HFAR)
C2304	1-161-494-00	CERAMIC 0.022uF	25V (L65HFAR,L75HFAR)
C2305	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V (L65HFAR,L75HFAR)
C2306	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V (L65HFAR,L75HFAR)
C2307	1-124-455-00	ELECT 100uF 20%	16V (L65HFAR,L75HFAR)
C2308	1-124-455-00	ELECT 100uF 20%	16V (L65HFAR,L75HFAR)
C2309	1-164-087-11	CERAMIC 0.0015uF 10%	50V (L65HFAR,L75HFAR)
C2310	1-164-087-11	CERAMIC 0.0015uF 10%	50V (L65HFAR,L75HFAR)
C2313	1-102-129-00	CERAMIC 10000PF 10%	50V (L65HFAR,L75HFAR)
C2318	1-161-327-00	CERAMIC 0.0033uF 30%	50V (L65HFAR,L75HFAR)
C2321	1-124-831-11	ELECT 4.7uF 20%	25V (L65HFAR,L75HFAR)
C2323	1-124-455-00	ELECT 100uF 20%	16V (L65HFAR,L75HFAR)
C2324	1-124-589-11	ELECT 47uF 20%	16V (L65HFAR,L75HFAR)
C2325	1-161-494-00	CERAMIC 0.022uF	25V (L65HFAR,L75HFAR)
C2326	1-102-129-00	CERAMIC 10000PF 10%	50V (L65HFAR,L75HFAR)
C2327	1-124-589-11	ELECT 47uF 20%	16V (L65HFAR,L75HFAR)
C2328	1-124-589-11	ELECT 47uF 20%	16V (L65HFAR,L75HFAR)
C2331	1-102-129-00	CERAMIC 10000PF 10%	50V (L65HFAR,L75HFAR)
C2332	1-124-455-00	ELECT 100uF 20%	16V (L65HFAR,L75HFAR)
C2380	1-111-241-11	ELECT 10uF 20%	16V (L65HFAR,L75HFAR)
C2389	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V (L65HFAR,L75HFAR)
C2397	1-111-241-11	ELECT 10uF 20%	16V (L65HFAR,L75HFAR)
C2398	1-111-241-11	ELECT 10uF 20%	16V (L65HFAR,L75HFAR)
C3001	1-102-129-00	CERAMIC 10000PF 10%	50V
C3002	1-102-129-00	CERAMIC 10000PF 10%	50V
C3003	1-102-129-00	CERAMIC 10000PF 10%	50V
C3005	1-117-754-11	CERAMIC 3900PF	50V
C3006	1-124-589-11	ELECT 47uF 20%	16V
C3010	1-161-375-11	CERAMIC 0.0022uF 10%	50V
C3011	1-115-437-11	CAPACITOR 0.1uF	5.5V
C3012	1-124-638-11	ELECT 22uF 20%	10V
C3013	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3014	1-126-155-11	ELECT 100uF 20%	6.3V
C3015	1-124-638-11	ELECT 22uF 20%	10V
C3016	1-162-286-31	CERAMIC 220PF 10%	50V
C3017	1-126-301-11	ELECT 1uF 20%	50V
C3018	1-126-301-11	ELECT 1uF 20%	50V
C3019	1-126-301-11	ELECT 1uF 20%	50V
C3020	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3021	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C3026	1-109-889-11	ELECT 1uF 20%	50V
C3027	1-126-155-11	ELECT 100uF 20%	6.3V
C3029	1-126-916-11	ELECT 1000uF 20%	6.3V
C3030	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3032	1-164-073-11	CERAMIC 100PF 10%	50V
C3033	1-126-176-11	ELECT 220uF 20%	10V
C3034	1-126-301-11	ELECT 1uF 20%	50V
C3035	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3039	1-126-154-11	ELECT 47uF 20%	6.3V
C3041	1-164-159-21	CERAMIC 0.1uF	50V
C3042	1-163-099-00	CERAMIC CHIP 18PF 5%	50V
C3043	1-163-099-00	CERAMIC CHIP 18PF 5%	50V
C3044	1-163-093-00	CERAMIC CHIP 10PF 5%	50V
C3045	1-163-093-00	CERAMIC CHIP 10PF 5%	50V
C3046	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3047	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V (L65HFAR,L75HFAR)
C3048	1-102-129-00	CERAMIC 10000PF 10%	50V
C3050	1-161-061-11	CERAMIC 0.068uF 10%	50V
C3051	1-161-494-11	CERAMIC 0.022uF 10%	50V
C3052	1-161-772-11	CERAMIC 0.1uF 10%	25V
C3053	1-102-129-00	CERAMIC 10000PF 10%	50V
C3054	1-102-129-00	CERAMIC 10000PF 10%	50V
C3055	1-111-241-11	ELECT 10uF 20%	16V
C3056	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3060	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C3061	1-124-257-00	ELECT 2.2uF 20%	50V
C3076	1-163-093-00	CERAMIC CHIP 10PF 5%	50V
C3077	1-163-093-00	CERAMIC CHIP 10PF 5%	50V
C3080	1-164-159-21	CERAMIC 0.1uF	50V
C3081	1-164-159-21	CERAMIC 0.1uF	50V
C3082	1-102-129-21	CERAMIC 0.01uF 10%	50V
C3083	1-102-129-21	CERAMIC 0.01uF 10%	50V
C3084	1-102-129-21	CERAMIC 0.01uF 10%	50V
C3101	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
C3107	1-111-241-11	ELECT 10uF 20%	16V
⚠C5001	1-136-188-11	FILM 0.068uF 5%	250V
⚠C5002	1-136-188-11	FILM 0.068uF 5%	250V

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Ref. No.	Part No.	Description			Remark
⚠C5005	1-115-383-11	CERAMIC	0.001uF	5%	250V
⚠C5007	1-115-383-11	CERAMIC	0.001uF	5%	250V
C5010	1-125-554-11	ELECT(BLOCK)	47uF	20%	400V
C5011	1-124-259-11	ELECT	4.7uF	20%	50V
C5012	1-110-974-11	CERAMIC	3300PF		500V
C5015	1-161-772-11	CERAMIC	0.1uF	10%	25V
C5017	1-102-822-00	CERAMIC	390PF	5%	50V
C5020	1-115-678-11	CERAMIC	47PF		1KV
C5021	1-110-973-11	CERAMIC	2200PF		500V
C5025	1-115-678-11	CERAMIC	47PF		1KV
C5101	1-126-926-11	ELECT	1000uF	20%	10V
C5102	1-126-916-11	ELECT	1000uF	20%	6.3V
C5103	1-126-935-11	ELECT	470uF	20%	16V
C5104	1-124-525-11	ELECT	1000uF	20%	25V
C5105	1-124-910-11	ELECT	47uF	20%	50V
C5106	1-126-947-11	ELECT	47uF	20%	35V
C5107	1-126-176-11	ELECT	220uF	20%	10V
C5111	1-124-455-00	ELECT	100uF	20%	16V
C5112	1-111-241-11	ELECT	10uF	20%	16V
C5113	1-126-162-11	ELECT	3.3uF	20%	50V
C5114	1-111-241-11	ELECT	10uF	20%	16V
C5115	1-111-241-11	ELECT	10uF	20%	16V
C5117	1-126-162-11	ELECT	3.3uF	20%	50V
C5124	1-124-464-11	ELECT	0.22uF	20%	50V
C5135	1-136-163-00	FILM	0.068uF	5%	50V
C6001	1-111-241-11	ELECT	10uF	20%	16V
C6002	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C6009	1-124-589-11	ELECT	47uF	20%	16V
C6010	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C6012	1-164-081-11	CERAMIC	470PF	10%	50V
C6015	1-126-965-11	ELECT	22uF	20%	50V
C6020	1-111-241-11	ELECT	10uF	20%	16V (L45AR)
C6032	1-161-052-00	CERAMIC	0.012uF	10%	50V (L45AR)
C6033	1-161-052-00	CERAMIC	0.012uF	10%	50V (L45AR)
C6044	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C6301	1-124-465-00	ELECT	0.47uF	20%	50V (L65HFAR,L75HFAR)
C6302	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6305	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6306	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6308	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6313	1-161-059-00	CERAMIC	0.047uF	10%	50V (L65HFAR,L75HFAR)
C6314	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6315	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6316	1-115-673-11	CAPACITOR	3.3uF		16V (L65HFAR,L75HFAR)
C6317	1-126-301-11	ELECT	1uF	20%	50V (L65HFAR,L75HFAR)
C6318	1-115-674-11	CAPACITOR	10uF		10V (L65HFAR,L75HFAR)
C6319	1-126-163-11	ELECT	4.7uF	20%	50V (L65HFAR,L75HFAR)
C6320	1-130-476-00	MYLAR	0.0027uF	5%	50V (L65HFAR,L75HFAR)
C6321	1-126-155-11	ELECT	100uF	20%	6.3V (L65HFAR,L75HFAR)
C6322	1-102-129-00	CERAMIC	10000PF	10%	50V (L65HFAR,L75HFAR)
C6323	1-126-154-11	ELECT	47uF	20%	6.3V (L65HFAR,L75HFAR)
C6324	1-124-465-00	ELECT	0.47uF	20%	50V (L65HFAR,L75HFAR)
C6325	1-126-301-11	ELECT	1uF	20%	50V (L65HFAR,L75HFAR)
C6326	1-136-967-11	MYLAR	0.012uF	5%	50V (L65HFAR,L75HFAR)
C6327	1-161-048-00	CERAMIC	0.0056uF	10%	50V (L65HFAR,L75HFAR)
C6391	1-162-280-11	CERAMIC	82PF	10%	50V
C6392	1-162-280-11	CERAMIC	82PF	10%	50V
		< CONNECTOR >			
⚠CN501	1-251-483-11	SOCKET, AC INLET			
		< DIODE >			
D1071	8-719-991-33	DIODE	1SS133T-77		
D1072	8-719-991-33	DIODE	1SS133T-77		
D1201	8-719-991-33	DIODE	1SS133T-77		
D2201	8-719-991-33	DIODE	1SS133T-77 (L65HFAR,L75HFAR)		
D2301	8-719-991-33	DIODE	1SS133T-77 (L65HFAR,L75HFAR)		
D2302	8-719-991-33	DIODE	1SS133T-77 (L65HFAR,L75HFAR)		
D2303	8-719-110-23	DIODE	RD11ES-B3 (L65HFAR,L75HFAR)		
D3001	8-719-986-73	DIODE	RB441Q		
D3002	8-719-986-73	DIODE	RB441Q		
D3003	8-719-986-73	DIODE	RB441Q		
D3005	8-719-991-33	DIODE	1SS133T-77		
D3006	8-719-991-33	DIODE	1SS133T-77		
D3009	8-719-109-92	DIODE	RD6.2ES-B1		
D3011	1-810-238-11	DIODE	ERA83-004V5		
D3012	1-810-238-11	DIODE	ERA83-004V5		
D5001	1-801-763-11	DIODE	DB155G-S		
D5003	8-719-901-83	DIODE	1SS83		
D5004	8-719-983-22	DIODE	MTZJ-T-77-27A		
D5006	8-719-901-83	DIODE	1SS83		
D5010	1-808-898-11	DIODE	AP0IC-V0		
D5012	1-803-252-11	DIODE	ZENER 1.5KE 120A		
⚠D5013	1-810-884-11	DIODE	PHOTO COUPLER PC123U2		
D5101	1-810-795-11	DIODE	RL2Z-LF-C4		
D5102	1-803-251-11	DIODE	SF-24		
D5103	8-719-901-83	DIODE	1SS83		
D5104	8-719-901-83	DIODE	1SS83		
D5105	1-801-991-11	DIODE	DI SFT14		
D5107	8-719-109-89	DIODE	RD5.6ES-B2		
D5108	8-719-109-89	DIODE	RD5.6ES-B2		
D5109	8-719-109-89	DIODE	RD5.6ES-B2		

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CP-A

Ref. No.	Part No.	Description		Remark
D5111	8-719-109-93	DIODE	RD6.2ES-B2	
D5116	8-719-300-45	DIODE	EM-1Z	
D5117	8-719-110-49	DIODE	RD18ES-B2	
D5125	8-719-300-45	DIODE	EM-1Z	
D5126	8-719-300-45	DIODE	EM-1Z	
D5127	8-719-300-45	DIODE	EM-1Z	
D5128	8-719-300-45	DIODE	EM-1Z	
D6001	8-719-982-26	DIODE	MTZJ-33B	
		< FUSE >		
⚠F5001	1-532-297-00	QUICK-ACTING FUSE	250V 2.5A	
		< IC >		
IC101	1-803-083-11	IC	LA71501DML	
IC102	1-801-758-11	IC	LC89978M	
IC231	1-803-077-11	IC	BH7801AK (L65HFAR,L75HFAR)	
IC301	1-803-341-11	IC	MN101D01FAF	
IC302	8-759-353-59	IC	LB1643	
IC303	1-801-760-11	IC	LA6358NM	
IC304	1-803-250-11	IC	BMR03H-04	
IC341	1-801-341-11	IC	24LC01B/P (L65HFAR,L75HFAR)	
IC341	8-759-381-49	IC	AT24C01A-10PC (L45AR)	
IC511	8-759-140-85	IC	uPC1093J	
IC631	8-752-053-35	IC	CXA1534S (L65HFAR,L75HFAR)	
		< JACK >		
* JK101	1-251-592-11	SOCKET, RCA-2 (440) (VIDEO IN/OUT)		
JK221	1-785-500-11	SOCKET, RCA-2 (AUDIO IN/OUT) (L45AR)		
* JK221	1-251-593-11	SOCKET, RCA-2 (330) (AUDIO IN/OUT(L)) (L65HFAR,L75HFAR)		
* JK222	1-251-594-11	SOCKET, RCA-2 (220) (AUDIO IN/OUT(R)) (L65HFAR,L75HFAR)		
		< COIL >		
L1002	1-410-517-11	INDUCTOR	47uH	
L1003	1-410-519-11	INDUCTOR	68uH	
L1007	1-410-509-11	INDUCTOR	10uH	
L1101	1-410-509-11	INDUCTOR	10uH	
L2021	1-410-509-11	INDUCTOR	10uH	
L3003	1-414-540-11	INDUCTOR	0uH	
L3004	1-414-540-11	INDUCTOR	0uH	
L3005	1-414-540-11	INDUCTOR	0uH	
* L5001⚠	1-411-767-11	FILTER, LINE		
L5010	1-414-540-11	INDUCTOR	0uH	
L5101	1-414-540-11	INDUCTOR	0uH	
L5102	1-414-540-11	INDUCTOR	0uH	
L5109	1-500-225-11	FERRITE	0uH	
L6001	1-410-511-11	INDUCTOR	15uH	
L6090	1-414-540-11	INDUCTOR	0uH	
		< PROTECTOR >		
⚠PR511	1-533-613-11	PROTECTOR, IC 0.8A 50V		
⚠PR512	1-801-567-11	PROTECTOR 1.25A 125V		
		< TRANSISTOR >		
Q1001	1-801-259-11	TRANSISTOR	TR 2SA1782S	
Q1002	1-801-878-11	TRANSISTOR	TR 2SC4640S	

Ref. No.	Part No.	Description		Remark
Q1003	1-801-259-11	TRANSISTOR	TR 2SA1782S	
Q1071	8-729-993-72	TRANSISTOR	2SA937-Q	
Q1101	1-801-259-11	TRANSISTOR	TR 2SA1782S	
Q1102	8-729-902-11	TRANSISTOR	2SC2021	
Q1201	8-729-900-33	TRANSISTOR	DTC144EF	
Q1202	8-729-900-33	TRANSISTOR	DTC144EF	
Q2021	1-810-471-11	TRANSISTOR	TR 2SC3331-S-AA	
Q2022	8-729-873-40	TRANSISTOR	2SD734-E	
Q2023	1-810-880-11	TRANSISTOR	TR 2SA1318-S	
Q2024	1-810-471-11	TRANSISTOR	TR 2SC3331-S-AA	
Q2025	1-810-471-11	TRANSISTOR	TR 2SC3331-S-AA	
Q2031	8-729-900-33	TRANSISTOR	DTC144EF	
Q2032	8-729-030-02	TRANSISTOR	DTC144ES	
Q2201	8-729-900-33	TRANSISTOR	DTC144EF (L65HFAR,L75HFAR)	
Q2202	1-809-235-11	TRANSISTOR	DTA144EL-TL2 (L65HFAR,L75HFAR)	
Q2203	8-729-900-74	TRANSISTOR	DTC143TS (L65HFAR,L75HFAR)	
Q2302	8-729-140-97	TRANSISTOR	KSA708 (L65HFAR,L75HFAR)	
Q2303	8-729-140-97	TRANSISTOR	KSA708 (L65HFAR,L75HFAR)	
Q2351	8-729-900-74	TRANSISTOR	DTC143TS (L65HFAR,L75HFAR)	
Q2352	8-729-900-74	TRANSISTOR	DTC143TS (L65HFAR,L75HFAR)	
Q3007	8-729-194-57	TRANSISTOR	2SC945-P	
Q3101	1-801-259-11	TRANSISTOR	TR 2SA1782S	
⚠Q5001	8-729-027-98	TRANSISTOR	2SK1460LS	
Q5002	1-809-602-11	TRANSISTOR	2SC2274-F-AA	
Q5003	8-729-140-97	TRANSISTOR	KSA708	
Q5004	1-809-602-11	TRANSISTOR	2SC2274-F-AA	
Q5101	1-801-334-11	TRANSISTOR	2SC5070	
Q5102	8-729-205-97	TRANSISTOR	2SC3668-Y	
Q5103	8-729-194-57	TRANSISTOR	2SC945-P	
Q5131	8-729-205-97	TRANSISTOR	2SC3668-Y	
Q5132	8-729-901-06	TRANSISTOR	DTA144EK	
Q5133	8-729-027-43	TRANSISTOR	DTC114EK-T96	
Q5134	1-801-878-11	TRANSISTOR	TR 2SC4640S	
Q6001	1-801-259-11	TRANSISTOR	TR 2SA1782S	
		< RESISTOR >		
R1001	1-216-057-00	METAL CHIP	2.2K 5% 1/10W	
R1002	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	
R1003	1-216-055-00	METAL CHIP	1.8K 5% 1/10W	
R1004	1-216-052-00	METAL CHIP	1.3K 5% 1/10W	
R1005	1-216-043-00	METAL CHIP	560 5% 1/10W	
R1006	1-216-065-00	METAL CHIP	4.7K 5% 1/10W	
R1008	1-216-097-00	METAL CHIP	100K 5% 1/10W	
R1011	1-216-089-00	METAL CHIP	47K 5% 1/10W	
R1012	1-216-089-00	METAL CHIP	47K 5% 1/10W	
R1013	1-216-123-11	METAL CHIP	1.2M 5% 1/10W	
R1014	1-216-055-00	METAL CHIP	1.8K 5% 1/10W	
R1015	1-216-071-00	METAL CHIP	8.2K 5% 1/10W	
R1016	1-216-055-00	METAL CHIP	1.8K 5% 1/10W	
R1017	1-249-412-11	CARBON	390 5% 1/4W	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Ref. No.	Part No.	Description			Remark
R1018	1-216-037-00	METAL CHIP	330	5%	1/10W
R1019	1-216-041-11	METAL CHIP	470	5%	1/10W
R1021	1-216-121-00	METAL CHIP	1M	5%	1/10W
R1022	1-216-125-00	METAL CHIP	1.5M	5%	1/10W
R1024	1-216-015-00	METAL CHIP	39	5%	1/10W
R1025	1-216-025-00	METAL CHIP	100	5%	1/10W
R1028	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1029	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1031	1-216-047-00	METAL CHIP	820	5%	1/10W
R1038	1-216-025-00	METAL CHIP	100	5%	1/10W
R1071	1-249-414-11	CARBON	560	5%	1/4W
R1072	1-249-414-11	CARBON	560	5%	1/4W
R1073	1-247-804-11	CARBON	75	5%	1/4W
R1074	1-249-418-11	CARBON	1.2K	5%	1/4W
R1076	1-216-022-00	METAL CHIP	75	5%	1/10W
R1101	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1102	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1104	1-249-417-11	CARBON	1K	5%	1/4W
R1105	1-216-049-11	METAL CHIP	1K	5%	1/10W
R1201	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R1202	1-216-041-11	METAL CHIP	470	5%	1/10W
R1203	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R1301	1-216-089-11	METAL CHIP	47K	5%	1/10W
R2001	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R2002	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R2003	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R2004	1-216-109-00	METAL CHIP	330K	5%	1/10W
R2005	1-216-035-00	METAL CHIP	270	5%	1/10W
R2006	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R2007	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R2008	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R2009	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R2010	1-216-083-00	METAL CHIP	27K	5%	1/10W
R2011	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (L65HFAR,L75HFAR)
R2011	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (L45AR)
R2012	1-216-083-00	METAL CHIP	27K	5%	1/10W (L45AR)
R2013	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (L45AR)
R2014	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R2015	1-216-083-00	METAL CHIP	27K	5%	1/10W (L45AR)
R2016	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (L45AR)
R2017	1-216-049-11	METAL CHIP	1K	5%	1/10W
R2021	1-216-083-00	METAL CHIP	27K	5%	1/10W
R2022	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R2023	1-216-049-11	METAL CHIP	1K	5%	1/10W
R2024	1-216-017-00	METAL CHIP	47	5%	1/10W
R2025	1-249-381-11	CARBON	1	5%	1/4W
R2026	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R2027	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R2028	1-216-031-00	METAL CHIP	180	5%	1/10W
R2029	1-216-073-00	METAL CHIP	10K	5%	1/10W
R2030	1-216-081-00	METAL CHIP	22K	5%	1/10W
R2051	1-216-049-11	METAL CHIP	1K	5%	1/10W (L45AR)
R2072	1-216-047-00	METAL CHIP	820	5%	1/10W
R2073	1-249-435-11	CARBON	33K	5%	1/4W
R2301	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L65HFAR,L75HFAR)
R2302	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L65HFAR,L75HFAR)
R2303	1-216-085-00	METAL CHIP	33K	5%	1/10W (L65HFAR,L75HFAR)
R2304	1-216-085-00	METAL CHIP	33K	5%	1/10W (L65HFAR,L75HFAR)
R2305	1-208-810-11	RES,CHIP	15K	1%	1/10W (L65HFAR,L75HFAR)
R2306	1-208-810-11	RES,CHIP	15K	1%	1/10W (L65HFAR,L75HFAR)
R2307	1-216-085-00	METAL CHIP	33K	5%	1/10W (L65HFAR,L75HFAR)
R2308	1-208-810-11	RES,CHIP	15K	1%	1/10W (L65HFAR,L75HFAR)
R2322	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L65HFAR,L75HFAR)
R2323	1-216-083-00	METAL CHIP	27K	5%	1/10W (L65HFAR,L75HFAR)
R2324	1-216-083-00	METAL CHIP	27K	5%	1/10W (L65HFAR,L75HFAR)
R2325	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (L65HFAR,L75HFAR)
R2326	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (L65HFAR,L75HFAR)
R2328	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R2329	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (L65HFAR,L75HFAR)
R2335	1-216-069-11	RES,CHIP	6.8K	5%	1/10W (L65HFAR,L75HFAR)
R2336	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (L65HFAR,L75HFAR)
R2337	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (L65HFAR,L75HFAR)
R2338	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (L65HFAR,L75HFAR)
R2341	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L75HFAR)
R2342	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L75HFAR)
R2371	1-216-045-00	METAL CHIP	680	5%	1/10W (L65HFAR,L75HFAR)
R2378	1-216-047-00	METAL CHIP	820	5%	1/10W (L65HFAR,L75HFAR)
R2379	1-216-039-00	METAL CHIP	390	5%	1/10W (L65HFAR,L75HFAR)
R2380	1-216-039-00	METAL CHIP	390	5%	1/10W (L65HFAR,L75HFAR)
R2382	1-216-085-00	METAL CHIP	33K	5%	1/10W (L65HFAR,L75HFAR)
R3001	1-216-081-00	METAL CHIP	22K	5%	1/10W
R3002	1-216-081-00	METAL CHIP	22K	5%	1/10W

When indicating parts by reference number, please include the board.

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CP-A

Ref. No.	Part No.	Description			Remark
R3004	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3005	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3006	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3007	1-216-033-00	METAL CHIP	220	5%	1/10W
R3010	1-249-425-11	CARBON	4.7K	5%	1/4W
R3011	1-249-431-11	CARBON	15K	5%	1/4W
R3012	1-249-431-11	CARBON	15K	5%	1/4W
R3013	1-249-437-11	CARBON	47K	5%	1/4W
R3014	1-249-416-11	CARBON	820	5%	1/4W
R3015	1-216-085-00	METAL CHIP	33K	5%	1/10W
R3016	1-208-810-11	RES,CHIP	15K	1%	1/10W
R3017	1-216-081-00	METAL CHIP	22K	5%	1/10W
R3018	1-249-425-11	CARBON	4.7K	5%	1/4W
R3019	1-249-425-11	CARBON	4.7K	5%	1/4W
R3020	1-216-045-00	METAL CHIP	680	5%	1/10W
R3021	1-216-045-00	METAL CHIP	680	5%	1/10W
R3022	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3023	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3024	1-216-105-00	METAL CHIP	220K	5%	1/10W
R3025	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3034	1-216-089-00	METAL CHIP	47K	5%	1/10W
R3035	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R3036	1-216-049-11	METAL CHIP	1K	5%	1/10W
R3038	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R3042	1-249-405-11	CARBON	100	5%	1/4W
R3043	1-216-295-11	METAL CHIP	0	5%	1/10W
R3044	1-249-415-11	CARBON	680	5%	1/4W
R3046	1-249-429-11	CARBON	10K	5%	1/4W
R3047	1-216-109-00	METAL CHIP	330K	5%	1/10W
R3049	1-216-085-00	METAL CHIP	33K	5%	1/10W
R3050	1-216-085-00	METAL CHIP	33K	5%	1/10W
R3051	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3052	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3053	1-216-083-00	METAL CHIP	27K	5%	1/10W
R3054	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3055	1-249-436-11	CARBON	39K	5%	1/4W
R3056	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R3057	1-249-419-11	CARBON	1.5K	5%	1/4W
R3058	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3059	1-249-425-11	CARBON	4.7K	5%	1/4W
R3060	1-212-946-11	FUSIBLE	3.3	5%	1/2W
R3061	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R3062	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R3063	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R3064	1-216-081-00	METAL CHIP	22K	5%	1/10W
R3065	1-216-081-00	METAL CHIP	22K	5%	1/10W
R3074	1-216-085-00	METAL CHIP	33K	5%	1/10W
R3081	1-216-073-00	METAL CHIP	10K	5%	1/10W
R3092	1-249-409-11	CARBON	220	5%	1/4W
R3101	1-216-037-00	METAL CHIP	330	5%	1/10W
R3102	1-216-101-00	METAL CHIP	150K	5%	1/10W
R3106	1-216-037-00	METAL CHIP	330	5%	1/10W
R3110	1-216-029-00	METAL CHIP	150	5%	1/10W
R5001	1-202-724-00	SOLID	2.7M	10%	1/2W
R5002	1-216-035-00	METAL CHIP	270	5%	1/10W
R5003	1-216-049-11	METAL CHIP	1K	5%	1/10W
R5004	1-216-103-00	METAL CHIP	180K	5%	1/10W
R5005	1-216-295-00	METAL CHIP	0	5%	1/10W
R5006	1-216-073-00	METAL CHIP	10K	5%	1/10W
R5007	1-216-073-00	METAL CHIP	10K	5%	1/10W
R5009	1-216-092-11	RES,CHIP	62K	5%	1/10W
R5010	1-247-885-00	CARBON	180K	5%	1/4W
R5011	1-247-885-00	CARBON	180K	5%	1/4W
R5101	1-249-411-11	CARBON	330	5%	1/4W
R5102	1-216-039-00	METAL CHIP	390	5%	1/10W
R5103	1-249-414-11	CARBON	560	5%	1/4W
R5104	1-249-422-11	CARBON	2.7K	5%	1/4W
R5105	1-249-410-11	CARBON	270	5%	1/4W
R5106	1-249-414-11	CARBON	560	5%	1/4W
⚠R5110	1-212-867-00	FUSIBLE	27	5%	1/4W
R5111	1-249-414-11	CARBON	560	5%	1/4W
R5112	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R5114	1-216-017-00	METAL CHIP	47	5%	1/10W
⚠R5120	1-240-259-11	FUSIBLE	8.2		1/4W
R5121	1-249-394-11	CARBON	12	5%	1/4W
R5123	1-249-420-11	CARBON	1.8K	5%	1/4W
R5132	1-249-423-11	CARBON	3.3K	5%	1/4W
R5133	1-249-428-11	CARBON	8.2K	5%	1/4W
R5134	1-249-424-11	CARBON	3.9K	5%	1/4W
R5135	1-216-013-00	METAL CHIP	33	5%	1/10W
R6001	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R6002	1-216-049-11	METAL CHIP	1K	5%	1/10W (L65HFAR,L75HFAR)
R6003	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (L65HFAR,L75HFAR)
R6007	1-216-111-00	METAL CHIP	390K	5%	1/10W
R6008	1-216-115-00	METAL CHIP	560K	5%	1/10W
R6010	1-217-735-11	FUSIBLE	680	5%	1/4W
R6012	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R6018	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (L45AR)
R6019	1-216-051-00	METAL CHIP	1.2K	5%	1/10W (L45AR)
R6301	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6302	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6303	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6304	1-216-097-00	METAL CHIP	100K	5%	1/10W (L65HFAR,L75HFAR)
R6306	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6307	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6309	1-216-089-00	METAL CHIP	47K	5%	1/10W (L65HFAR,L75HFAR)
R6310	1-216-118-00	RES,CHIP	750K	5%	1/10W (L65HFAR,L75HFAR)
R6311	1-216-089-00	METAL CHIP	47K	5%	1/10W (L65HFAR,L75HFAR)
R6312	1-216-091-00	METAL CHIP	56K	5%	1/10W (L65HFAR,L75HFAR)
R6317	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (L65HFAR,L75HFAR)

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Ref. No.	Part No.	Description			Remark
R6318	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (L65HFAR,L75HFAR)
R6320	1-216-063-00	METAL CHIP	3.9K	5%	1/10W (L65HFAR,L75HFAR)
R6321	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (L65HFAR,L75HFAR)
R6322	1-216-088-00	METAL CHIP	43K	5%	1/10W (L65HFAR,L75HFAR)
R6323	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L65HFAR,L75HFAR)
R6324	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R6325	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L65HFAR,L75HFAR)
R6326	1-216-121-00	METAL CHIP	1M	5%	1/10W (L65HFAR,L75HFAR)
R6327	1-216-097-00	METAL CHIP	100K	5%	1/10W (L65HFAR,L75HFAR)
R6328	1-249-429-11	CARBON	10K	5%	1/4W (L65HFAR,L75HFAR)
		< SWITCH >			
S6001	1-692-957-11	SWITCH, SLIDE (1P-2T) (CH SW)			
		< TRANSFORMER >			
T2001	1-431-150-11	TRANSFORMER, OSC 70KHz			
⚠T5001	1-427-930-11	TRANSFORMER, PULSE POWER			
		< VARIABLE RESISTOR >			
VR631	1-228-748-11	RES, ADJ, METAL 10K (INPUT LEVEL)			(L75HFAR)
VR631	1-228-994-00	RES, ADJ, METAL 10K (INPUT LEVEL)			(L65HFAR)
VR632	1-228-993-00	RES, ADJ, METAL 4.7K (SEP.LOW)			(L65HFAR,L75HFAR)
VR632	1-228-747-11	RES, ADJ, METAL 4.7K (SEP.LOW) (L75HFAR)			
VR633	1-228-995-00	RES, ADJ, METAL 22K (ST.DBX FILTER)			(L65HFAR,)
VR634	1-228-747-11	RES, ADJ, METAL 4.7K (SEP.LOW) (L75HFAR)			
VR634	1-228-993-00	RES, ADJ, METAL 4.7K (SEP.HIGHT) (L65HFAR)			
VR635	1-228-995-00	RES, ADJ, METAL 22K (VCO)			(L65HFAR,L75HFAR)
		< VIBRATOR >			
X1001	1-760-597-11	CRYSTAL, OSC 3.579545MHz			
X1002	1-767-494-11	CRYSTAL OSC 3.582056MHz			
X3001	1-579-220-11	CRYSTAL, OSC (32KHz)			
X3002	1-767-167-11	CRYSTAL OSC 14.31818MHz			
X3003	1-767-707-11	CRYSTAL OSC 14.32823MHz			

Ref. No.	Part No.	Description			Remark
*	A-6794-580-A	MC-1 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C8001	1-161-063-00	CERAMIC	0.1uF	10%	50V
		< CONNECTOR >			
CN801	1-251-531-11	SOCKET (12P)			
		< RESISTOR >			
R8001	1-249-420-11	CARBON	1.8K	5%	1/4W
R8002	1-249-416-11	CARBON	820	5%	1/4W
R8003	1-249-410-11	CARBON	270	5%	1/4W
R8004	1-249-407-11	CARBON	150	5%	1/4W
		< SWITCH >			
S8002	1-762-173-11	SWITCH, EP (1P-1T)			
* ◊	A-6794-546-A	TM-1 BOARD, COMPLETE (L75HFAR)			
* ◊	A-6794-560-A	TM-1 BOARD, COMPLETE (L65HFAR)			
* ◊	A-6794-568-A	TM-1 BOARD, COMPLETE (L45AR)			
		**********			
*	3-966-986-01	HOLDER, IR			
*	3-976-271-01	HOLDER, FL			
		< FLUORESCENT INDICATOR >			
A7101	1-517-676-11	TUBE, FLUORESCENT INDICATOR			
		< CAPACITOR >			
C7101	1-124-259-11	ELECT	4.7uF	20%	50V
C7131	1-162-291-31	CERAMIC	560PF	10%	50V
C7132	1-162-291-31	CERAMIC	560PF	10%	50V
C7133	1-162-291-31	CERAMIC	560PF	10%	50V
C7134	1-162-291-31	CERAMIC	560PF	10%	50V
		< CONNECTOR >			
CN711	1-251-394-11	SOCKET, RIBBON (13P)			
* CN712	1-251-589-11	SOCKET, RIBBON (5P)			
		< DIODE >			
D7101	8-719-991-33	DIODE	1SS133T-77		
D7102	8-719-991-33	DIODE	1SS133T-77		
D7103	8-719-991-33	DIODE	1SS133T-77		
D7104	8-719-991-33	DIODE	1SS133T-77		
D7151	8-719-301-58	DIODE	SEL2910D-D		
D7152	8-719-301-58	DIODE	SEL2910D-D		
D7153	8-719-301-58	DIODE	SEL2910D-D		
D7154	8-719-301-58	DIODE	SEL2910D-D (L75HFAR)		
D7171	8-719-991-33	DIODE	1SS133T-77 (L75HFAR)		
D7179	8-719-991-33	DIODE	1SS133T-77 (L65HFAR,L75HFAR)		

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TM-1 TM-2 VP-1

Ref. No.	Part No.	Description			Remark
D7181	8-719-991-33	DIODE	1SS133T-77 (L65HFAR)		
		< IC >			
IC711	1-801-355-11	IC	MN12510		
		< COIL >			
L7101	1-500-225-11	FERRITE	0uH		
		< TRANSISTOR >			
Q7151	8-729-029-66	TRANSISTOR	DTC114ES		
Q7152	8-729-029-66	TRANSISTOR	DTC114ES		
Q7153	8-729-029-66	TRANSISTOR	DTC114ES		
Q7154	8-729-029-66	TRANSISTOR	DTC114ES (L75HFAR)		
		< RESISTOR >			
R7121	1-249-414-11	CARBON	560	5%	1/4W
R7122	1-249-414-11	CARBON	560	5%	1/4W
R7123	1-249-414-11	CARBON	560	5%	1/4W
R7124	1-249-414-11	CARBON	560	5%	1/4W
R7131	1-249-429-11	CARBON	10K	5%	1/4W
R7132	1-249-429-11	CARBON	10K	5%	1/4W
R7133	1-249-429-11	CARBON	10K	5%	1/4W
R7134	1-249-429-11	CARBON	10K	5%	1/4W
R7135	1-249-439-11	CARBON	68K	5%	1/4W
R7136	1-249-439-11	CARBON	68K	5%	1/4W
R7137	1-249-439-11	CARBON	68K	5%	1/4W
R7138	1-249-439-11	CARBON	68K	5%	1/4W
R7151	1-249-408-11	CARBON	180	5%	1/4W
R7152	1-249-408-11	CARBON	180	5%	1/4W
R7153	1-249-408-11	CARBON	180	5%	1/4W
R7154	1-249-408-11	CARBON	180	5%	1/4W (L75HFAR)
		< RECEIVER >			
RR711	1-475-047-11	PACK UNIT, IR RECEIVER			
		< SWITCH >			
S7101	1-771-288-11	SWITCH, PUSH 1P-1T (ATR)			
S7102	1-771-288-11	SWITCH, PUSH 1P-1T (TR+)			
S7103	1-771-288-11	SWITCH, PUSH 1P-1T (TR-)			
S7104	1-771-288-11	SWITCH, PUSH 1P-1T (CH UP)			
S7105	1-771-288-11	SWITCH, PUSH 1P-1T (CH DOWN)			
S7106	1-771-288-11	SWITCH, PUSH 1P-1T (PAUSE/STILL)			
S7107	1-771-288-11	SWITCH, PUSH 1P-1T (FF)			
S7108	1-771-288-11	SWITCH, PUSH 1P-1T (REW)			
S7109	1-771-288-11	SWITCH, PUSH 1P-1T (PLAY)			
S7110	1-771-288-11	SWITCH, PUSH 1P-1T (STOP)			
S7111	1-771-288-11	SWITCH, PUSH 1P-1T (REC)			
S7112	1-771-288-11	SWITCH, PUSH 1P-1T (ERASE)			
S7113	1-771-288-11	SWITCH, PUSH 1P-1T (SERCH)			
S7114	1-771-288-11	SWITCH, PUSH 1P-1T (PRESET)			
S7120	1-771-288-11	SWITCH, PUSH 1P-1T (ALL CLEAR)			
		< VIBRATOR >			
X7101	1-233-491-11	CERAMIC OSC 4.000MHz			

Ref. No.	Part No.	Description			Remark
* ◊	A-6794-547-A	TM-2 BOARD, COMPLETE (L75HFAR)			
* ◊	A-6794-561-A	TM-2 BOARD, COMPLETE (L65HFAR)			
* ◊	A-6794-569-A	TM-2 BOARD, COMPLETE (L45AR)			
		**********			
		< CAPACITOR >			
C7211	1-102-973-00	CERAMIC	100PF	5%	50V (L75HFAR)
C7212	1-102-973-00	CERAMIC	100PF	5%	50V (L45AR ,L75HFAR)
		< CONNECTOR >			
CN722	1-251-589-11	SOCKET (5P), RIBBON (L75HFAR)			
CN722	1-251-525-11	SOCKET (4P), RIBBON (L45AR)			
		< DIODE >			
D7201	8-719-301-58	DIODE	SEL2910D-D		
D7202	8-719-301-58	DIODE	SEL2910D-D		
		< JACK >			
JK721	1-785-499-11	JACK, RCA-3 (L45AR)			
JK721	1-785-158-11	JACK, RCA-3 (L75HFAR)			
		< RESISTOR >			
R7201	1-249-408-11	CARBON	180	5%	1/4W
R7202	1-249-408-11	CARBON	180	5%	1/4W
R7211	1-247-804-11	CARBON	75	5%	1/4W (L45AR ,L75HFAR)
R7212	1-249-417-11	CARBON	1K	5%	1/4W (L75HFAR)
R7213	1-249-417-11	CARBON	1K	5%	1/4W (L45AR ,L75HFAR)
		< SWITCH >			
S7201	1-771-288-11	SWITCH, PUSH 1P-1T (POWER)			
S7202	1-771-288-11	SWITCH, PUSH 1P-1T (EJECT)			

* ◊	A-6794-554-A	VP-1 BOARD, COMPLETE (L65HFAR,L75HFAR)			
* ◊	A-6794-567-A	VP-1 BOARD, COMPLETE (L45AR)			
		**********			
*	3-947-425-01	HOLDER, LED			
		< CAPACITOR >			
C1805	1-102-129-00	CERAMIC	10000PF	10%	50V
C1806	1-102-129-00	CERAMIC	10000PF	10%	50V
C1807	1-126-154-11	ELECT	47uF	20%	6.3V
C1808	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1809	1-126-301-11	ELECT	1uF	20%	50V
C1810	1-102-129-00	CERAMIC	10000PF	10%	50V
C1811	1-102-129-00	CERAMIC	10000PF	10%	50V
C1831	1-162-207-31	CERAMIC	22PF	5%	50V
C1832	1-162-207-31	CERAMIC	22PF	5%	50V
C1833	1-162-207-31	CERAMIC	22PF	5%	50V
C1834	1-162-207-31	CERAMIC	22PF	5%	50V
C1835	1-102-129-00	CERAMIC	10000PF	10%	50V

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Ref. No.	Part No.	Description			Remark
C1836	1-102-129-00	CERAMIC	10000PF	10%	50V
C1837	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C2901	1-126-176-11	ELECT	220uF	20%	10V (L65HFAR,L75HFAR)
C2902	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2903	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2904	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2905	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2906	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2907	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2908	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2910	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
C2911	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L65HFAR,L75HFAR)
		< CONNECTOR >			
CN181	1-251-588-11	SOCKET, RIBBON (12P) (L45AR)			
CN181	1-251-670-11	SOCKET, RIBBON (15P) (L65HFAR,L75HFAR)			
* CN182	1-251-395-11	SOCKET, FFC (7P) (L45AR)			
* CN182	1-251-591-11	SOCKET, FFC (12P) (L65HFAR,L75HFAR)			
		< IC >			
IC181	1-801-761-11	IC	LA70011L		
IC291	1-801-156-11	IC	LA7256 (L65HFAR,L75HFAR)		
		< COIL >			
L2901	1-410-509-11	INDUCTOR	10uH (L65HFAR,L75HFAR)		
		< RESISTOR >			
R1801	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1802	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R1803	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (L45AR)
R1803	1-216-073-00	METAL CHIP	10K	5%	1/10W (L65HFAR,L75HFAR)
R1804	1-216-045-00	METAL CHIP	680	5%	1/10W
R1805	1-216-045-00	METAL CHIP	680	5%	1/10W
R1806	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R1807	1-216-049-11	METAL CHIP	1K	5%	1/10W
R1808	1-216-049-11	METAL CHIP	1K	5%	1/10W
R1831	1-216-295-00	METAL CHIP	0	5%	1/10W
R1833	1-216-039-00	METAL CHIP	390	5%	1/10W
R1834	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R2901	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (L65HFAR,L75HFAR)
R2902	1-216-080-00	METAL CHIP	20K	5%	1/10W (L65HFAR,L75HFAR)
R2903	1-216-049-11	METAL CHIP	1K	5%	1/10W (L65HFAR,L75HFAR)
R2904	1-216-049-11	METAL CHIP	1K	5%	1/10W (L65HFAR,L75HFAR)

MISCELLANEOUS
****

6	1-693-424-11	TUNER (RF/TU/IF)
52	1-698-912-11	MOTOR, ROTOR CYL DC 2W
54	1-698-913-11	MOTOR, STATOR CYL DC 2W
104	1-810-691-11	PHOTO DIODE PN263L-NC
110	1-810-690-11	LED LN59L
111	1-801-326-11	PHOTO COUPLER SG-105F
169	1-763-142-11	MOTOR, CAPSTAN DC3W

ACCESSORIES & PACKING MATERIALS
****

	1-475-752-11	COMMANDER, STANDARD (RMT-V241) (L75HFAR)
	1-475-753-11	COMMANDER,STANDARD(RMT-V242) (L45AR ,L65HFAR)
	1-782-945-11	CABLE, A/V (-3) (L65HFAR,L75HFAR)
	1-782-946-11	CABLE, NTSC ANT
◊	3-864-075-11	MANUAL INSTRUCTION (SPANISH) (L75HFAR)
◊	3-864-076-11	MANUAL INSTRUCTION (SPANISH) (L45AR ,L65HFAR)
*	3-976-267-01	CUSHION (FRONT)
*	3-976-268-01	CUSHION (BACK)
⚠	1-790-254-11	CORD, POWER

****
HARDWARE LIST
****

#1	7-685-647-79	SCREW +BVTP	3X10 TYPE2 N-S
#2	7-685-645-79	SCREW +BVTP	3X6 TYPE2 N-S
#3	7-685-646-79	SCREW +BVTP	3X8 TYPE2 N-S
#4	7-685-661-19	SCREW +BVTP	4X12 TYPE2 N-S

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